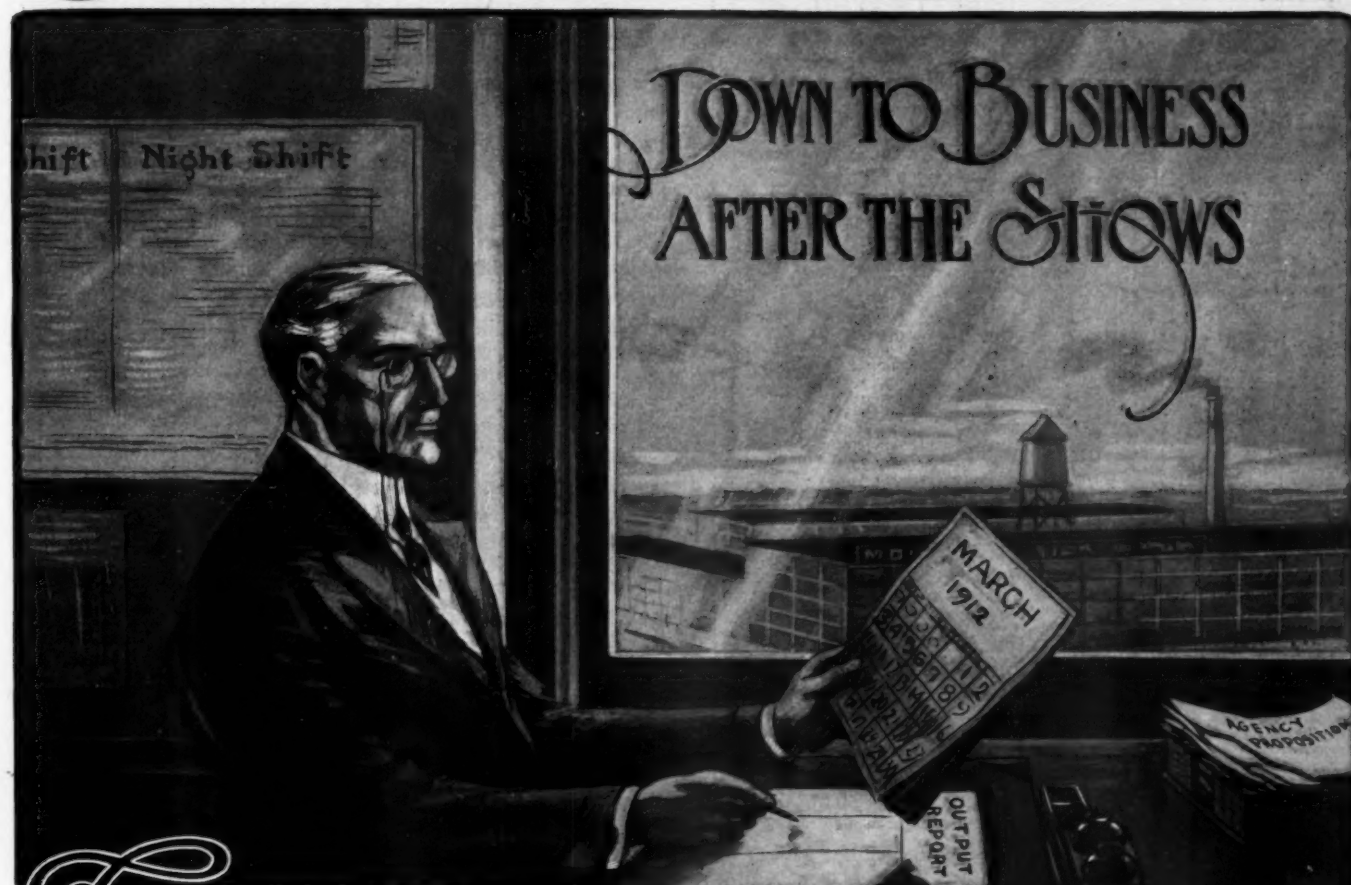


# THE AUTOMOBILE



THROUGHOUT the past season of automobile shows, of which the Boston exhibition was the last event of national importance, the manufacturers of automobiles all over the country have been directing part of their energies to the display of their cars and to securing agents. Now that this strenuous and more or less exciting time is over they are settling down to the work of turning out cars fast enough to meet the rapidly increasing demand due to the coming of spring. And, judging by the reports of a majority of the manufacturers, the demand for American-made cars is greater than ever this spring. For the actual sales made at the automobile shows, both national and local, represent but a very small percentage of the total business gained. That is, the people who bought cars at the shows were very few beside those who became interested and who have either placed their orders since the shows or are preparing to place them in the near future. These are the orders which are now pouring in upon the automobile makers and which provide work for the factories for months ahead. Some of the companies have already received orders covering their entire output for the present year and a few have orders as far ahead as the early part of 1913. Moreover, many prospective buyers are holding off for the coming of pleasant weather, preferring to take their demonstrations under agreeable conditions. The makers and dealers expect that, as soon as the real spring days have begun, a perfect flood of orders will pour in upon



TABLE SHOWING AUTOMOBILE REGISTRATION IN  
THE UNITED STATES FROM JANUARY 1,  
TO MARCH 1, 1912, INCLUSIVE

State	Total	Trucks	Fees	Remarks
Alabama	151	8	\$2,531.00	New law
Arizona	1,000	10	5,000.00	Local reg.
Arkansas	1,750	27	8,885.00	
California	29,500	1,300	59,000.00	
Colorado†	5,200	10	15,000.00	Local reg.
Connecticut*	6,500	296	120,000.00	
Delaware	676	48	7,240.00	
Dist. of Columbia*	301	34	1,090.00	
Florida	418	52	836.00	
Georgia	8,350	77	8,400.00	
Idaho†	1,000	15	5,000.00	Local reg.
Illinois	23,000	892	207,000.00	
Indiana	672	22	500.00	
Iowa	18,900	804	126,014.72	
Kansas†	7,000	100	.....	No State law
Kentucky	719	59	5,250.00	
Louisiana†	3,500	30	17,500.00	Local reg.
Maine	848	64	12,462.00	
Maryland*	5,200	72	46,800.00	
Massachusetts	19,844	1,800	257,345.35	
Michigan	12,731	876	46,272.00	
Minnesota	6,000	600	9,000.00	
Mississippi	770	23	3,850.00	
Missouri	11,786	125	49,952.00	
Montana†	2,000	100	.....	No State law
Nebraska	212	15	500.00	
Nevada†	430	4	1,200.00	Local reg.
New Hampshire	1,000	100	12,000.00	
New Jersey*	16,000	760	144,000.00	
New Mexico†	875	17	3,000.00	Local reg.
New York	48,155	5,404	506,322.25	
North Carolina	100	3	500.00	
North Dakota	400	12	1,200.00	
Ohio	25,200	590	136,383.43	
Oklahoma†	2,200	20	11,000.00	
Oregon	4,556	87	19,909.00	
Pennsylvania	26,164	1,800	265,000.00	
Rhode Island	4,500	110	50,000.00	
South Carolina†	4,300	35	20,000.00	Local reg.
South Dakota	8,500	32	8,500.00	
Tennessee	340	40	680.00	
Texas†	11,000	200	60,000.00	Local reg.
Utah	41	4	90.00	
Vermont	338	8	6,273.50	
Virginia	2,900	75	29,000.00	
Washington	8,000	80	16,000.00	
West Virginia	146	2	1,500.00	
Wisconsin	8,316	420	41,580.00	
Wyoming†	950	4	4,750.00	Local reg.
Total	342,439	17,266	\$2,354,306.25	

\*Including non-residents.

†Estimated on basis of population with reference to location and sectional registration.

them. Practically all the manufacturers agree in reporting that their spring business began earlier this year and in far greater volume than ever before, and there are only a few dissenting voices to the generally expressed sentiment that this is going to be a banner season for the automobile industry in spite of being a presidential year.

In order to ascertain the progress which has been made by the manufacturers since the beginning of the year THE AUTOMOBILE made a careful canvass by letters, requesting each manufacturer to give the number of cars which he turned out during the months of January and February, the number of cars he intends to make during the present year and asking a number of other questions. Of course, this information was of such a character that the makers stipulated that it should be confidential and that their respective figures should be used only in arriving at totals.

Considering the replies in the order in which the questions were asked, the first to come to our attention relates to the percentage of the 1912 output which the manufacturers managed to turn out during the months of January and February. This percentage varied widely among the different makers, the lowest being 25 per cent. and the highest 75 per cent. The average is 52 per cent. From these figures it is easy to see that the manufacturers are far ahead of their expectations in production, yet, as a rule, they are not ahead of the orders already secured. It means that they will either have to increase their output of 1912 cars or else begin work on their 1913 cars earlier than usual. Many companies, in fact nearly all of them, are making additions to their plants and striving to better conditions at the factories in various ways with the aim of increasing the production.

In the issue of January 4, 1912, THE AUTOMOBILE published the estimate of the number of cars to be turned out during 1912 as given by the manufacturers. The figures, 247,427, seem somewhat large, even as compared with the 1911 output of 209,957 cars, but from present indications the makers will not fall below their estimates and may, perhaps, surpass them. One company alone has turned out 20,000 cars during the past 2 months, which fact renders the total of 128,664 cars manufactured in January and February less surprising when compared with 62,846 produced in the same period last year. Several of the companies declare that these months were the best in their history, the statement generally being like this: "January was the best month we had ever had until February came along and now it looks as though March is going to break all our records." And this optimistic tone seems to pervade the industry. Totalling our reports from the various manufacturers we found that 58,422 cars were completed in January, 1912, as compared with 28,581 in January, 1911, and that 70,242 were made in February of this year as against 34,265 in the same month of 1911. The average price of automobiles in 1911 was \$1,250, and, figuring on this basis, the values of these outputs are as follows:

CARS	VALUE	CARS	VALUE
January, 1911		January, 1912	
28,581.....	\$35,726,250	58,422.....	\$73,027,500
February, 1911		February, 1912	
34,265.....	\$42,831,250	70,242.....	\$87,802,500
62,846.....	\$78,557,500	Totals 128,664.....	\$160,830,000

In the same way the 1911 output of 209,957 cars represents a value of \$262,446,250, while the estimated output of 247,427 for 1912 figures up to \$309,283,750.

### Output Doubled First Two Months

The size of the output for the months of January and February, 1911, is graphically compared with that for the same months in 1912 in the illustration at the bottom of this page, while on the opposite page the total production for 1911 is contrasted in the same manner with the manufacturers' estimate of the number of cars to be built this year. The curve at the top of page 737 is plotted from the same figures, but gives a more comprehensive view of the situation from a different angle. The long, dotted line represents the 1911 production equally divided among the 12 months of the year, while the long, heavy line denotes the estimated output for the present year similarly distributed. Seemingly out of keeping with these are the two other lines, the short, dotted one representing the production for January and February, 1911, and the short, heavy one showing the number of cars turned out during the same period this year. This is particularly the case as regards the last-mentioned curve, which strikes boldly up to 128,664, more than half the number

62,846 CARS

128,664 CARS



BUILT DURING  
JAN. & FEB. 1911.



BUILT DURING  
JAN. & FEB. 1912.

Showing relative size of output of automobiles for first 2 months of 1911 and 1912



of cars which the makers have given as their estimate of the 1912 output. But when this is compared with the short, dotted line, with reference to the longer lines, it is found that things were very much the same at this time last year, though the great increase in the number of cars to be turned out in 1912 and the enlargement of factories all over the country have exerted a correspondingly multiplying influence on the output of the first two months of the year.

The answers to a request for a comparison of the state of business at the present time with that existing at the same time last year were varied, but the great majority stated that this year conditions are much better than was the case in 1911. One company reported an increase of more than 400 per cent. over last year. Several others declared a growth of business amounting to over 200 per cent. and a large number were jubilant over a 100 per cent. increase. There were very few who had not a substantial growth to boast of and most of the makers had at least a 30 per cent. increase in business. One of the established, conservative companies stated that sales by its branches during January and February, 1912, were 144 per cent. in excess of those made last year in the same time. One reason for the largely increased number of sales this spring is that a great many new agents were appointed all over the country during the recent automobile shows. These agents, full of enthusiasm and with all the charms of the attractively designed 1912 cars to further their arguments, are taking advantage of the now practically universal acceptance of the automobile due to the overcoming of prejudices and to the undeniable establishment of its value. One of the manufacturers brought out the real point in the much-mooted question as to the worth of automobile shows in a way which should settle that problem once for all when he wrote: "The value of the automobile show lies not in its direct sales, but in the fact that it intensifies interest in the entire automobile business."

#### Makers Expect Big Things of 1912

As regards the comparison of business conditions this spring with those in 1911, the statements of several of the manufacturers are of interest. One of the largest, from the point of output, says: "The condition of manufacture and sales is practically double that for January and February of last year." Another company states: "We have been smothered to death with orders, and at the present time have more orders than we can possibly fill during the remainder of the fiscal year." Others declare that they are from a month to six weeks behind their orders, and many say: "We expect the largest automobile year in the history of our business."

In response to a question as to what conditions throughout the country had an influence in pushing the manufacturer in his production or in holding him back, the general answer has been that the increase or decrease of demand for cars due to good

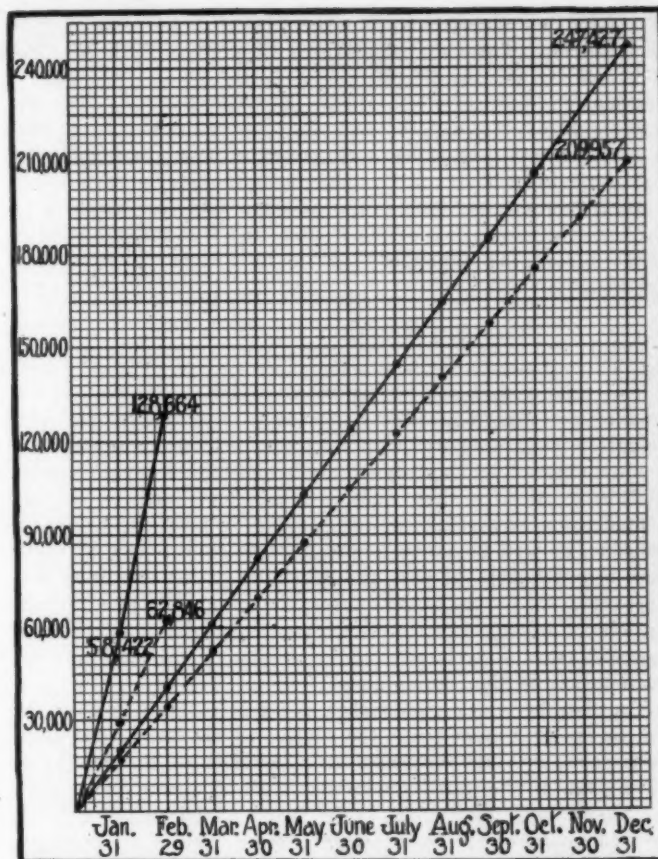


DIAGRAM SHOWING CAR PRODUCTION IN 1911 AND 1912

Long dotted line represents 1911 output

Long heavy line denotes estimated production in 1912

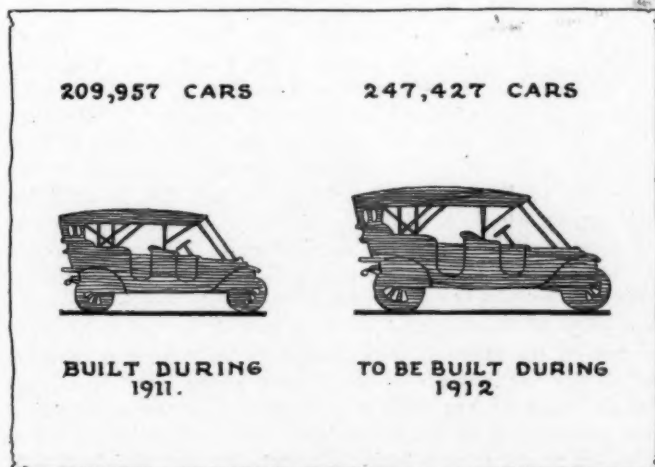
Short dotted line shows output in first 2 months of 1911

Short heavy line indicates cars made in first 2 months of 1912

or poor crops, the condition of business in general or to the appeal made to the public by particular features in the cars themselves. Some of the makers attribute the improvement in business to the more favorable attitude of the bankers to the automobile industry. One company confirmed the prognostication expressed in the January 4 issue of THE AUTOMOBILE that the influence of the second-hand car would soon begin to be felt by declaring that the chief factor in holding back production was the competition of the second-hand car. Another manufacturer found that the combination of a cold winter in the North with a poor cotton market in the South had a very detrimental effect on sales and, consequently, on production.

One of the companies answered the question regarding business conditions as follows: "The firm financial conditions and unprecedented prosperity that prevailed throughout the country at the commencement of the present season, and which have been sustained with surprising and increased fidelity, perhaps have been the greatest contributing factors to the growth and production of the automobile industry during the past seven months. Not for a single moment has there occurred the slightest fluctuation or uneasiness as to the security of the business or output for the year. It is perfectly natural that the motor car should share equally with the general pulse of trade, and, perhaps, somewhat in advance, as the unmet demands and field of utility are greater as a rule than for an old-established article. From the great corporations down to the thrifty farmer the motor car is found an absolute necessity, and the increased business which is made possible through this new medium of economical and rapid transportation will more than offset the expenditures which some people contend are likely to result in a depressing effect in other channels where investments otherwise would be made.

"The output is by no means in excess of the demands in a family and commercial way, and should simply be considered a



Comparison of total number of cars produced in years of 1911 and 1912

new stage in transportation, as indispensable as the steam engine or telephone. The experimental and innovation stage has long since passed, and the extensive uses of the motor car insure a permanency and stability which is unquestioned. The last shadow of doubt as to the security of investment that existed among conservative business men passed with the preceding year, and there is no lack of abundant support and co-operation in banking relations and from every important and necessary source. Political situations forecast no trouble, and it is unreasonable to presume that the automobile should be affected more than a car wheel foundry.

### Sales Are Readily Made This Year

"That trade conditions are far in advance of those of a year ago can be said with greatest safety. Sales have nearly doubled, and every day witnesses the same ratio of increase. Competent dealers are secured with much greater ease, and sales more readily made. The majority of purchasers have a comprehensive knowledge of what they want in a car, and much of the old apprehension of breakdowns and inability to properly care for a machine, as well as exhaustive arguments on the part of salesman in portraying the uses and reliability of his line, have disappeared. People no longer look at the automobile as a toy and an object of mystery, but purchase from the standpoint of necessity, with a fairly accurate knowledge of the workings and good points of the leading cars."

The date by which each maker expected to have finished the last of his 1912 models was the subject of the last of the questions asked by THE AUTOMOBILE. A number of the companies have given up the yearly model plan and, of course, these could not answer this inquiry, but, as the yearly model plan is still followed by most of the manufacturers, these were in the minority. The earliest date given was May 31 and the latest August 1. The average, however, is July 1.

In order to secure an idea of how things are going in the different states, THE AUTOMOBILE obtained from the secretaries of state, in each case where this was possible, the total number of cars registered during January and February of this year,

together with the number of trucks registered during this time and the total amount of fees collected. In a number of cases the secretary of state was unable to give the exact figures without spending a great deal of time on the matter, and, as this was impracticable, gave an approximate figure. In other cases we were obliged to estimate, as there were no available figures. The seeming discrepancies in the table on page 736 are explained by the fact that the laws concerning the time and manner of registration vary in the different states, so that January and February are the big months for registration in some states and at the same time are the least important in others. As shown in the table, there are nine states which require automobiles to be registered only as provided for in their respective counties. In these instances estimates were necessary. Two of the states have no provision whatever for the registration of automobiles. Still, the figures given are accurate, considering the difficulty of securing them, and give an excellent idea of how registration is going on in the various states. In this connection it must be remembered that January and February are the months in which all cars must be registered for the year in several of the biggest automobile states. This accounts for the large total of 342,439 registrations which represent nearly half of the number of automobiles in use in the United States at the present time.

### Making Inroads on Foreign Trade

Altogether the past two months have been very satisfactory from the automobile manufacturers' point of view as well as from that of the dealer and seem to promise an unusually successful year for the whole industry. Every day automobiles are being shipped by carloads from the factories and still the dealers are clamoring for more. The American-made car is rapidly gaining business for its makers in foreign countries and automobiles exports are constantly increasing. Many of the companies are having difficulty in procuring freight cars for shipping their product from the factories and some of the railroads have put in orders for more cars designed for shipping automobiles. In fact, if the rest of the year bears out the promise of January and February, 1912 will be a banner year.

### Cut-Out Unnecessary with Good Muffler

Under the auspices of the Touring Club of America a test was held on Tuesday last at the laboratory of Joseph Tracy, the former racing driver, in Rutherford, N. J., for the purpose of determining the amount of power actually lost through the muffler in a stock motor and whether such loss was great enough to justify the extended use of the muffler cut-out. The results attained by the test show a remarkably small loss of power through the muffler. This is especially exemplified at 900 revolutions per minute, which corresponds to a car speed of 30 miles per hour on high speed. With the muffler cut-out open and closed, the motor showed a horsepower of 38.5.

The results attained are shown by the following tabulation:

Revolutions per minute	Horsepower, cut-out open	Horsepower, cut-out closed
300	13	13.5
400	17.5	17.75
500	22.5	22.5
600	26.5	27
700	31.25	32
800	34.75	35
900	38.5	38.5
1000	41.5	43
1100	45.25	45.5
1200	45.5	47.5
1300	48.5	47.5
1400	50	50
1500	50.25	45.75
1600	51	46
1700	48.5	45.5
1800	46.5	47.25

The motor used in connection with the test was a 30-horsepower stock four-cylinder Packard with a standard muffler. The test is valuable in that it shows that with a well-designed muffler the power lost through back pressure will be small.

### Details of Knight-Rolland Case

PARIS, March 9—The decision handed down a week ago at Tours in the litigation between Knight & Kilbourne and the Rolland & Pillain concern has resulted in American interests in this city and in France generally becoming interested in the present patent law in France, particularly looking into the hardships which this law imposes on an American citizen taking out patents in France, and also in several other European countries.

Knight & Kilbourne have already announced that the case has been taken to the French court of appeals.

It is difficult for an American, not familiar with French judiciary, to understand the nature of the Tours trial. The court was composed of citizens without regard to technical or legal training. In such a court, a patent case is presented by advocates who sit as a jury, accepting whatever they feel inclined to look upon favorably. It is not imperative to take evidence. It was imperative on this court to establish the fact that in obtaining their patents Knight & Kilbourne did not make the proper working demonstration within the required time. The court did not call for evidence to establish such a fact, but based its assumptions on a public address by Charles Y. Knight, made before the expiration of the required working period, in which he commented on the practical impossibility of an American carrying out all the requirements of the French patent law. It appears that no statement was made in such address of any nature other than generalizing on the patent law. The court at Tours seized upon this utterance as a basis for conclusion that Knight & Kilbourne had not made the required working demonstration within the 3 years as required by the International Convention.



## Fighting the Tire-Dating Bill

### Makers and Dealers Gather at Albany to Oppose Passage of the Chanler-Roosevelt Measure

#### Will Hurt Manufacturer Without Benefiting Buyer—Tire Improves with Age Up to 9 Months

ALBANY, March 19—The hearing this afternoon before the Judiciary Committee of the New York State Senate on the tire-dating bill, which was introduced by Senator Roosevelt and which passed the Assembly last week, brought representatives of the leading tire makers to the capital in opposition to the measure.

It was brought out by these tire men that the bill would work to the extreme disadvantage of the tire manufacturers without in any way benefiting the ultimate users. The import of such a law would be that a tire which was 1 or 2 years old would be inferior to one which bore a much later date, when, as a matter of fact, the former is proven by tests to be far superior to the new or green product, since it had been allowed to "age." The opinion was unanimous among those against the passage of the measure that a tire is not sufficiently cured until it is at least 8 or 9 months old, and that its efficiency really increases with its age up to 1 year. If properly stored in a dark place under correct temperature conditions, there is no discernible deterioration up to 3 years. Beyond that time, however, the tire begins to lose some of its good qualities.

#### Work 6 Months, Idle 6 Months

To meet the requirements of such a tire-dating law, the manufacturers explained that they would necessarily have to work their factories at breakneck speed night and day for 6 months of the year in order to get their product in the hands of the dealers in time for the spring and summer business, and that after this rush was over the plants would remain practically idle for the remainder of the year. Some of the men would have to be laid off during these idle periods, and with such adverse working conditions, manufacturers could not hope to maintain the services of desirable operators.

In addition to this, enactment of the measure into a law would make it impossible for the tire concerns to supply small out-of-the-way dealers with sufficiently late-dated tires to meet the demands of their customers, by virtue of the increased cost of keeping fresh tires in the hands of the dealer.

The question as to whether or not the public could be educated to the fact that an 8 or 9 months' old tire is better than a new one was raised by the committee. This was answered by the manufacturers, who stated that the bill would ever discredit the properly aged tire, since the buying public would get the impression that the dating was done for a definite purpose. The makers could not see why they should be called upon to educate the public when the guarantees, which cover all reputable tires, fully protect the user regardless of the age of the tire.

It was further shown by the experts that the age of a tire does not determine its usefulness. Rather, this is fixed by the material which goes into its construction, the workmanship and the manner of storing. The bill is a flat denial of this, and puts the poorer makers on the same footing as the concerns which have perfected methods of manufacture.

As stated by the manufacturers, tire dating is an incentive to mislead the public. According to the bill as drawn up, there is nothing to prevent the unscrupulous tire vender from re-treading and vulcanizing old shoes and re-dating them at the

same time. These same dealers would mislead the public into believing that green and improperly cured tires are the best.

The measure further provides that a dated tag be attached to every tire, and it was claimed that such date-tags could be easily changed. No dating method would be sure unless it were made a part of the tire itself, just as the name is a part.

It was also explained that such a measure would work a two-fold hardship to the maker within the state. Manufacturers from other states could sell their products in all other states without dating them, while the New York maker would have to date every tire, whether sold within the state or elsewhere.

Dealers present stated that under the provisions of such a law, they could afford to keep but very small stocks of tires. The buyer would visit all the supply stores and purchase at the one which had the tire of latest date in stock.

The bill was characterized as class legislation and unwarranted discrimination against only one branch of the rubber industry. Date all goods manufactured of whatever nature, and the tire makers said they would offer no objection to such an enactment.

Very little was said in favor of the measure, Assemblyman Chanler, who proposed it, simply stating that he felt that the public should be protected against unscrupulous tire dealers who sell tires which are long past their usefulness. This, he said, was endangering public safety.

The tire manufacturers were of the same opinion in regard to indiscriminate tire selling by irresponsible parties, but they were firmly convinced that such a measure could not stamp out the evil.

Particular interest is taken in the bill by tire men since a number of the other states usually follow the example of the Empire State in such matters, and were the bill passed these states might enact similar legislation without serious consideration of its merits.

As the Legislature is scheduled to adjourn on March 29, the bill will, doubtless, come up for consideration during the coming week.

### Will Build a Combination Car

DETROIT, MICH., March 18—The Canadian Two-In-One Auto Company has been organized by Detroit men to manufacture a combination pleasure and commercial car known as the Canadian Two-In-One. The company is now considering offers of sites in several Canadian cities and will decide on a location within the next few days. It is planned to start manufacturing some time in the summer. The company is capitalized at \$200,000. Those principally interested are F. A. Smith, F. E. Bowen, S. S. Cole and F. A. Hovey.

The company has turned out a sample car, which is being used on the streets here. As a passenger car it comfortably seats five persons. To convert it into a delivery truck, it is only necessary to throw the rear doors back on the body, pull back the rear seat until it drops down to form a sort of extension of the body and remove the cushions. The car will carry 500 pounds of merchandise easily. The Two-In-One will sell in Canada at \$1,900. It is planned to establish another plant in Detroit later.

### A. C. A. Special Meeting Postponed

Proving of so much greater scope than was expected, the amended plan covering changes in the by-laws of the Automobile Club of America was not presented at the special meeting Tuesday night and the matter has been postponed for 2 weeks. The original intention was to supply drafts of the recommended changes to the whole membership on March 12, thus giving everybody a whole week to consider them before the special meeting.

## In the Legal Field

### Klaxon Plea Against Ever-Ready Sustained—Best Chain Grip Representative Sued by Weed

#### Decision in Republic vs. Morgan & Wright Next Month—Settling Carhartt Company's Affairs

JUDGE HOUGH'S order sustaining the plea of the Lovell-McConnell Manufacturing Company for a preliminary injunction against the American Ever Ready Company for unfair competition and infringement of the Klaxon patents, which was carried to the United States Circuit Court of Appeals, has been reaffirmed by that court.

The matter came to issue in the United States District Court about 2 months ago and Judge Hough issued an order after the hearing which read in part as follows:

"And the defendant company is prohibited from making, shipping, selling, advertising or exposing for sale any articles of manufacture or horn so similar in appearance to the warning signals manufactured and sold by complainant as to deceive or capable of deceiving any person or persons and restraining any article of manufacture or horn embodying the characteristic right-angled construction of the horn manufactured by the Lovell-McConnell Manufacturing Company."

In the opinion handed down March 15 Judge Lacombe for the United States Circuit Court of Appeals for the Second Circuit, holds that "this cause closely resembles *Rushmore vs. Manhattan Works*, 163 F. R. 939"; that "the resemblance between complainant's horns and defendant's horns is very great,".....; that the Every Ready horn is "a manifest imitation in details of construction, with the consequent likelihood of confusion"; and that "the order for preliminary injunction should be affirmed."

This decision was in the suit on Lovell-McConnell Manufacturing Company's design patents Nos. 39,785 and 39,801, in which infringement was joined with a charge of unfair competition.

There are two other suits by the Lovell-McConnell Manufacturing Company against the American Ever Ready Company charging infringement of five important mechanical patents for the Klaxon, Nos. 923,048, 923,049, 923,122, 957,161 and 956,898. But the charge of unfair competition being technically objectionable has been eliminated from the complaints in these suits. The defendant has recently filed answers in the latter suits of the usual form setting up the usual defenses including citation of patents from the prior art. They are mainly patents cited in prior suits on the Klaxon patents.

#### Progress in Settling Züst Affairs

Settlement of the bankruptcy proceedings against the Züst Motor Company were advanced a step on Monday when the United States District Court referred back the whole matter to the original referee for a hearing on Thursday.

The company's liabilities total about \$37,000, and Attorney Harry Sidney Stewart proposed a composition on a basis of 15 per cent. This met with objections on the part of some of the creditors, and the matter will have to be threshed out again before the referee.

#### Weed Enters Suit Against Best

Suit has been entered by the Parsons Non-Skid Company against Benjamin M. Asch, in the United States District Court for the Southern District of New York. The plaintiff com-

pany's American rights are owned by the Weed Chain Tire Grip Company and the defendant is a dealer in automobile sundries in this city. Mr. Asch represents H. E. McLain, of Natick, Mass., in selling the Best Chain Grip, manufactured by McLain.

Suit was entered this week and the case has been set down for hearing before Judge Lacombe on Friday. Like all the other Weed suits, this one asks for injunction, accounting and damages.

#### Republic-M. & W. Case in April

Quick action in the courts as far as the ultimate settlement of the suit of the Republic Rubber Company against Morgan & Wright, involving the question of infringement of the Mell patent, is indicated by the fact that the case has been set down for hearing in April. After the Republic company won in the District Court in January, the injunction issued against the Morgan & Wright was suspended under bond and the Nobby tread tires were manufactured without legal check. It was thought that the case might drag along until next fall and the promptness in coming to a final hearing has caused much favorable comment in the trade and elsewhere.

The matter will be heard by the United States Circuit Court of Appeals. Judge Hazel wrote the opinion in the District Court.

#### Washington Garage to Dissolve

WASHINGTON, D. C., March 16—On petition of the Carpenter Automobile Company, for an order of dissolution, E. B. Kimball, attorney, has been appointed receiver pending the proceedings. The assets of the company are given as \$20,427, while the liabilities are listed at \$13,900.

#### Overland-Buffalo Wins Suit

BUFFALO, N. Y., March 20—A verdict of no cause of action was returned here in the case of Gustave M. Poppenberg, against the Overland-Buffalo Company, for \$50,000 damages, the contention of the Poppenberg company being that the Overland-Buffalo Company published advertisements which injured the former's automobile business. It was brought out that Mr. Poppenberg purchased a number of Overland cars from the manufacturers which he advertised and put on sale. The Overland-Buffalo Company took exception to the advertisements and, so Poppenberg claimed, his character and business were injured. The Overland-Buffalo Company made a general denial of the charges and the action, which was tried before Justice Emery in Supreme Court, was dismissed.

#### Delivery Company Beats Panhard

The jury which heard the case of the Interboro News Delivery Company against the Panhard Company has returned a verdict for the plaintiff for \$1,760. The amount sued for was about \$5,600. For three days the suit was on trial before Judge Meyer in the United States District Court. The Interboro sued to collect certain charges for repairs and maintenance of two trucks purchased by it from the Panhard Company and the defense fought the claim on the theory that the repairs were required because the plaintiff company abused the trucks by using unskillful drivers.

#### Sue for Failure to Secure Agency

The formation of the International Motor Company has resulted in a curious little legal tangle out in Youngstown, O., that has been brought to the attention of the courts in that city. The form assumed by the dispute is a suit filed by the Kelly Automobile Company against the International Motor Company, claiming \$2,023 for demonstrating expenses.



According to White & Case, attorneys for the International, the facts in the case are that prior to the merger the Mack company was figuring on establishing a local agency at Youngstown and the Kelly company had a Mack truck for show and demonstrating purposes. The agency was not established because the Saurer company already had an agency at Youngstown and when the companies merged into the International Motor Company, separate representation was not required.

When the Kelly company failed to get the agency, suit was brought to cover damages therefor.

### Realizing on Carhartt Assets

Three automobiles and two 50-horsepower Herschell-Spillman motors, the property of the Carhartt Automobile Sales Company, now in process of bankruptcy, were sold under the hammer Tuesday. The proceeds will be added to the bankrupt estate and will be used to make up a dividend on the proved-up claims. The cars listed at about \$4,000. A minimum price of 75 per cent. of the appraised value was fixed in order to make the sale effective.

The property sold for \$2,230, which brings the total amount on hand to about \$4,000. The claims filed in gross amount to about \$20,000 and there are several of them that will be contested. It is not considered unlikely that the dividend will be 25 per cent. after the list of creditors has been subjected to the acid test.

### Small Assets and Big Liabilities

PHILADELPHIA, March 19—Referee in Bankruptcy S. Conrad Ott received an order of reference in the case of S. Max Emeline, trading as the Pine Motor Company, of Collingswood, from United States District Court Judge Gross. The assets are valued at \$40 and the liabilities at \$3,514.86.

### Bribed Employees to Increase Sales

DETROIT, MICH., March 18—Robert S. Brown, of the Acme White Lead & Color Works, Detroit, and Charles Baumheckel, of the Forbes Varnish Company, Cleveland, were arrested here last week on charges of having bribed employees of the Studebaker Corporation for the purpose of increasing their sales. Charles Holcomb, one of the employees approached, tipped the alleged scheme off to the company and he later accepted the bribes under instructions, it is said. The warrants followed. The defendants entered pleas of not guilty and were released in \$500 bonds, each, to appear for examination later.

### Allow Employees' Claims for Wages

LOUISVILLE, March 15—By agreement of attorneys representing the various interests of the receivership of the American Automobile Company in the Floyd Circuit Court yesterday the court will allow the claims of the employees for wages due.

### R. C. H. Is Increasing Its Output

DETROIT, MICH., March 18—Work is being rushed on the additions to the R. C. H. Corporation's plant, a small army of workmen being employed on the job. The improvements include an office building, a shipping dock with accommodations for 200 cars, a new foundry, a new test building, a power house and a few smaller buildings. The company is now shipping thirty-five cars a day and expects to increase the daily production to forty cars this week.

DETROIT, MICH., March 18—Judge Posmer entered an order in the Wayne circuit court last week dissolving the Plymouth Motor Company.

## Washington Bankrupt

### Loving Succeeds Gary Carter as Co-Receiver—Washington Corporation Elects New Officers

#### Reorganizing W., C. & P., Inc.—Panhard Loses to the Interboro News Delivery Company

WASHINGTON, D. C., March 16—The Carter Motor Car Corporation has been adjudged bankrupt by an order signed today by Justice Barnard. The case was referred to E. S. McCalmont, referee in bankruptcy. The order provides that the adjudication shall not interfere with equity proceedings in Maryland affecting the property of the corporation.

In the equity suit in this jurisdiction, Justice Barnard substituted Lucas P. Loving as co-receiver with Wilton J. Lambert in place of A. Gary Carter, president of the corporation. Mr. Carter resigned his receivership. The new receivers were authorized to sell the assets of the company.

The Washington Motor Car Corporation recently elected the following officers: President, A. Gary Carter; vice-presidents, W. D. Arrison, J. D. Darnall, P. M. Galvin, Ralph Bricker, W. P. Magruder, Dr. John R. Sharp; treasurer, Lewis S. Kann; assistant treasurer, Dr. Thomas E. Latimer; secretary, C. C. Gove; assistant secretary, J. F. Lillard; general manager, Frank L. Carter; advertising manager, H. O. Carter. The following new directors were elected: A. L. Cline, Maj. C. Fred Cook, W. W. Price, J. H. Ontrich, Dr. E. A. Gorman, and Charles F. Ruppert.

In addition to the line of Washington cars the corporation is planning to bring out a new model, known as the Hyattsville Special, a four-cylinder, 40-horsepower car listing at \$850.

### Planning to Reorganize W., C. & P.

John S. Sheppard, Jr., receiver for Wyckoff, Church & Partridge, Inc., has obtained an order from Judge Hand to issue \$20,000 of receiver's certificates in order to raise sufficient immediate capital to continue the business under direction of the court.

The certificates are payable in 3 months and are secured by the leasehold on New York property occupied by the corporation and the factory at Kingston, subject to the mortgage indebtednesses.

The receiver has made a preliminary survey of the business and has estimated that the total liabilities of the company are \$650,000, of which \$250,000 is secured. The assets are said to be \$582,000.

Officers of the company are at work upon a plan for reorganization and announcements have been made that progress along that line is satisfactory. Official announcement of the plan is expected in about a week.

### Another Dyer License Granted

Voluntary and involuntary measures were taken this week to enforce the Dyer transmission patents. Ernest W. Gerdacht, of Brooklyn, owner of a Crawford car, was granted an individual user's license and an order *pro confesso* was entered in the United States District Court of the Southern District of New York against Louis Pittsburg, a garage owner in Manhattan.

Service was had in the five cases brought against importers and users of imported cars, which were exclusively outlined in these columns last week. These matters will come up on April rule day.

## Fine Weather Booms Trade Row Establishments All Feel the Quick- ening Impulse of Warm Sun and Balmy Air

### Edwards Will Build Four and Six-Cylinder Cars Under Knight Patent

**F**AVORABLE weather the past few days has caused a boom in retail sales of automobiles in New York. Every concern doing business on the row has felt the seasonable effect of the weather and new records of business have been hung up in many of the establishments.

All through the bad weather the local concerns kept piling up orders, but deliveries were not lively. Most of the orders were for April delivery and the warm sun has centered a series of demands all along the line for immediate delivery. This has resulted in a car shortage, the like of which has never been known in New York at this season of the year. The Chalmers company is bare of stock, and according to Carl H. Page, the demand has been greater during the past week for quick deliveries than he had ever experienced.

The Regal and Abbott branch is cleared of available cars; White, Mitchell, Cadillac, Maxwell, Everitt, Jackson, Moon and almost every other line selling in the middle cost register have made new marks. In the high-priced cars the Winton, Packard and Lozier have beaten last year's record, while the Stearns is far out in front of previous marks.

Among the little fellows, the R. C. H., Hupmobile, Ford and other low-priced cars are doing full capacity business. The railroad car shortage has made itself felt sharply and in the case of the R. C. H., has caused much use to be made of express service.

As one of the leading retail merchants said: "The ice-gorge broke all in a minute and the whole row has been deluged with a flood of orders. Two weeks ago a buyer could get immediate delivery with thanks, but he has to wait now."

### Edwards to Build Six and Four

H. J. Edwards, of the Edwards Motor Car Company, is due to return to this country from England this week, having completed his negotiations with Charles Y. Knight. Just what was the result of these negotiations was not announced and the exact type of product to be manufactured by the new company has not been made public.

C. G. Stoddard in speaking of the matter said that after Mr. Edwards' return these details would be established. In referring to the company Mr. Stoddard said: "We have determined to make two models, a six and a four and are considering several factory locations. Indianapolis is prominent upon this list."

### N.A.A.M.-A.B. of T. Merger

Merger of the Automobile Board of Trade with the National Association of Automobile Manufacturers will be the subject considered at the meeting of the merger committee of the latter organization which will be held at headquarters, 7 East Forty-second street, New York, on Thursday morning. The meeting, it is understood, will take no action at this session, but will arrange a basis of negotiations for submission to the Board of Trade.

### Motor Omnibuses for Toronto

TORONTO, CAN., March 18—Messrs. H. G. and F. G. Sharp and Julian A. Halford, of London, England, have formed a company to operate motor 'buses in Toronto, beginning May 1.

These gentlemen are well-known transport experts of the English metropolis and they believe that Toronto will patronize a satisfactory omnibus service so operated as to relieve the congestion on the street railway. Machinery Hall at the Canadian National Exhibition has been leased for 3 months and will be turned into a big garage for the storage of the fifty omnibuses which will comprise the initial fleet of cars. By the first of August the company will have found other suitable premises or erected a building of its own. The type of omnibus to be employed will be of the double-deck variety, the upper section being removable for seasons of severe winter weather. The 'buses will be run on schedule, over fixed routes, and the fare will be 5 cents with no transfers. The first cars to be placed in service will be of English manufacture, but the agents of Canadian and American manufacturers have already made overtures to Mr. Halford and the Canadian representative of the company, W. C. Chisholm, to design a car that will be of greater comfort and utility for the climate of Toronto and the varying conditions of its roadways and streets.

### Studebaker \$8,000,000 Note Issue

The recently authorized issue of \$8,000,000 of gold notes by the Studebaker Corporation, to refund and liquidate the floating indebtedness of the corporation, has been formally offered to the public under the plan outlined in THE AUTOMOBILE some time ago.

Clem Studebaker, Jr., vice-president of the corporation, has issued a statement under date of March 16 outlining the purposes of the issue and stating that the earnings of the corporation, applicable to interest charges, were in excess of \$2,500,000 in 1911, and that since January 1 the business of the company has increased largely over the volume enjoyed up to this time last year. He said the actual orders booked so far indicate materially increased profits for the current year.

### Changes in Chalmers Personnel

Official announcement by the Chalmers Motor Company states that C. C. Hildebrand, assistant general manager and sales manager of the corporation, has resigned and that Henry W. Ford has been promoted to the position of assistant general manager. The sales managership has been filled by the appointment of Percy Owen.

Mr. Ford will remain as secretary of the company and will continue as head of the advertising department in addition to his new duties.

Mr. Owen has been connected with the company for several years as Eastern sales manager and European representative. His appointment, according to the announcement, will not alter the present sales policy of the company.

### Tone with Overland Company

Fred I. Tone, designing engineer at the Marion plant in Indianapolis, has been promoted to the position of chief engineer for the Willys-Overland Company, Toledo, Ohio, succeeding W. H. Cameron, who recently resigned. For several years prior to his going with the Marion Company he was chief engineer of the American Motor Car Company at Indianapolis, and designed the first American underslung roadster built in this country.

### Unsuccessful Bidders Protest

BUFFALO, N. Y., March 20—During the past week the councilmen approved of aldermanic action directing the local fire commissioners to contract with the American-La France Fire Engine Company, of Elmira, N. Y., for a combination pumping and hose motor apparatus at \$8,500. The Knox Motor Car Company and Gustave H. Poppenberg submitted bids for this motor apparatus and they made a storm of protest when an outside



concern was given the contract. Arthur W. Meyer, representing the Knox Motor Car Company, submitted a bid of \$8,500, identically the same as that given by the Elmira company and he could not understand why outside concerns should be given preference to Buffalo-made apparatus. Simon Seibert, appearing for the fire commissioners, declared the motor will be purchased from the Elmira concern because they have been making motor fire apparatus for the past 10 years. Mr. Meyer explained that his concern had been experimenting with motor fire engines for the past 12 years. G. H. Poppenberg represented the Victor Motor Car Company, in making his bid of \$5,500 and he also protested at the hearing. Mr. Poppenberg and Mr. Meyer carried the circumstances to Mayor Fuhrmann, but the executive upheld the action of the councilmen.

### Hendersons to Start Factory

CHICAGO, March 20—There comes from Indianapolis today a well-substantiated rumor that the Hendersons are about to make a change in their business plans, which will result in the introduction of a new make of car on the market.

According to the talk from Hoosierdom, C. P. Henderson, at present head of the Henderson Motor Sales Company, which handles the output of the Cole Motor Car Company, intends transferring his business interests to the Cole company. The Cole company will hereafter market its own product under this announcement. The Henderson Motor Sales Company will continue with R. P. Henderson as the guiding spirit, but instead of simply being a middleman, it will embark in the manufacturing field itself, making a low-priced car to be known as the Henderson 25. The factory will in all probability be located in Indianapolis.

### Commercial Antiques Still Active

As a sidelight on the early use of the commercial vehicle, an interesting bit of motor truck history, dating back to 1894, has been uncovered.

In that year the pioneer Saurer truck was built at Arbon, Switzerland, by Adolph Saurer. It was practically an experimental machine, used for transporting embroidery machinery over the Alps. Though now 17 years old, the veteran is still in service at the Arbon plant.

Another old timer, whose biography is of interest, is the Mack truck which was built in Brooklyn in 1900 at the original plant of the Mack concern. This machine was designed as a sight-seeing 'bus for one Isaac Harris, of Brooklyn, who used it daily in Prospect Park.

But its history was not to end here. The truck continued in service as a passenger vehicle for 7 or 8 years, passing through a number of users' hands, and being used in several Eastern cities. About 4 years ago the 'bus was sold to a firm in Tucson, Arizona. Here it was converted by its new owners into a freight-carrying vehicle, and it may still be seen in the streets of the Arizona city in that capacity.

Such old warhorses as these make one wonder if the 15 per cent. depreciation which the average truck owner charges against his machine each year is not very much too high.

### Johnson Quits Automobile Field

MILWAUKEE, Wis., March 16—Announcement is made by the Johnson Service Company that it has determined to abandon the manufacture of pleasure cars and commercial motor vehicles which it has been identified with for the last 6 or 7 years. The company will from now on confine its attention to the manufacture of heat-regulating devices and will have nothing more to do with the motor industry. The death of Professor Warren S. Johnson is responsible for the company's withdrawal.

## Goodrich Cuts Juicy Melon

### Additional Stock Issue of \$25,000,000 and Also a Cash Dividend of 78 Per Cent.

#### Rumors of a Merger of Big Tire Companies Responsible for a Rise in Rubber

**P**ERTINENT reasons for the recent strength in rubber shares were shown this week when announcement was made that the B. F. Goodrich Company proposed to capitalize its surplus profits by an additional stock issue of \$25,000,000 and a cash dividend amounting to 78 per cent.

The company as at present constituted has a capitalization of \$20,000,000, and for many years has retained a considerable portion of its profits in the form of surplus, using these funds to develop and strengthen its position.

On March 28 a serial meeting of the stockholders has been called to vote on the proposed increase in stock.

The common shares under this arrangement would receive 270 per cent. in new stock and a cash dividend of 78 per cent. The preferred shareholders will be offered 120 per cent. either in stock or cash, at their option. Goldman, Sachs & Co., Lehman Brothers, and Kleinwort Sons Co. are to handle the financial details.

The new common stock will be on a 4 per cent. basis, whereas the present common stock has been drawing dividends of 12 per cent. The new preferred, which will amount to \$15,000,000, will draw 7 per cent. This issue will be retired in 33 years at par and 5 per cent.

At the New York offices of the company it was said that the rumor as to removal of headquarters to New York city was without foundation.

### Merger Rumors Strengthen Rubber

Displaying more excitement than at any time within a year, the local market for crude rubber advanced Tuesday to a new high level, selling at \$1.19 a pound on a basis of fine up-river. The advance followed the boom in prices that carried the London market over the 5-shilling mark.

Crude rubber sagged back somewhat after touching \$1.17 1-2 per pound last week and then advanced slowly, regaining all the loss except 1 1-2 cents per pound on light trading. Imports were somewhat better in size and quality, but the total volume of trade locally is unimportant. In the London market crude rubber was quiet and steady. The Mexican disturbance is credited with strengthening the market for guayules, although the prices quoted show no appreciable advance. The distinct strength shown by rubber shares recently is based to some extent upon rumors that the B. F. Goodrich Company is contemplating the merger of one or more tire plants with its big factory.

The truth of the rumor is definitely challenged by officers of the Goodrich corporation, who state emphatically that there is not the slightest ground for its circulation.

International Rubber, United States Rubber and other listed issues are strong. This is credited to investment buying.

### Rubber Goods Company's Dividend

The Rubber Goods Manufacturing Company, the corporation that holds control of the tire manufacturing companies belonging to the United States Tire Company, has declared a quarterly dividend of 6 per cent. on the common stock. The usual annual dividend is 7 per cent., but at the preceding quarterly meeting in December the rate was raised to 3 per cent.

## Out-Stilwells Stilwell Bill

### Measure Introduced by Senator Harte Covers Brakes, Lights, Signals, Illumi- nated Registry Numbers, Etc.

#### Intricate Mechanical Contrivances Will Be Necessary to Fully Comply With Its Provisions

WORD comes from Albany that the Stilwell bill, that strange and gloomy measure introduced last month to mulct automobile owners about \$80 each for a contraption that would show green and red lights behind the car, has been run up on the siding. As far as this goes it is good news, but in the same message comes word that Senator Harte has put in another bill concerning lights that has the Stilwell bill beaten to a nice, thick froth.

This bill steps out into the limelight and proposes to make a number of things law that are not now law and never have been law here or elsewhere. The Stilwell bill only sought to make it compulsory for the New York automobilist to purchase a tail light that would show red while the car was going at normal speed, whatever that may be, and green when slowing down preparatory to coming to a stop. But the Harte measure makes its predecessor look like a game of barnyard casino alongside an involved chess problem.

No comment is required after reading the text of the proposed law, which is reproduced below:

"That every motor vehicle operated or driven on the public highways of this state shall be provided with not only adequate brakes, but also suitable and adequate devices for signaling, and shall, during the period from one-half hour after sunset until one-half hour before sunrise, display at least two lighted lamps on the front and on the rear of such vehicles, a transparent plate showing in white light the registered number of the vehicle in separate Arabic numbers not less than 4 inches in height, and each stroke to be of a width not less than 5-8 inch, and as a part of such number the initial letters N. Y., a red light and two transparent plates showing in red light, one the letter R, and an arrow pointing to the right shall be displayed and shown from the time the vehicle shall change its course to the right; the other the letter L and an arrow pointing to the left shall be displayed and shown from the time the vehicle shall change its course to the left until it shall have completed its change of course to the left, said letters R and L and said arrows to be at least 3 inches in length and not less than 5-8 inch in period.

"The rays of such transparent number, red light and red direction lights (when in use) shall be visible for at least 50 feet in the direction from which the motor vehicle is proceeding. Every person operating or driving a motor vehicle on the public highways of this state shall also, when approaching a cross-road outside the limits of a city or incorporated village, slow down the speed of the same and shall sound his bell, horn or other device for signaling in such a manner as to give notice and warning of his approach."

The Touring Club of America will have a delegation on hand to contest this measure when it comes out of committee. Secretary F. H. Elliott and representatives of the dealers and manufacturers will attend.

### Kentucky Solons Fail to Act

LOUISVILLE, KY., March 16—The General Assembly of Kentucky adjourned last Tuesday night without passing either of the two automobile measures introduced during the 1912 meeting. The Knight bill, championed by the Louisville Automobile Club and favored by the majority of the motorists in Kentucky,

passed the House of Representatives by a vote of 71 to 0, but no action was taken on the measure in the Senate.

Automobile owners are elated over the refusal of the House to enact the Newcomb bill, considered one of the most drastic measures of its kind ever introduced in the General Assembly. It passed the Senate several weeks ago by a vote of 17 to 8, but met its Waterloo in the House this week, after it had been loaded down with amendments to such an extent as to make it unrecognizable.

It is believed that the existing law, if rigidly enforced, will do about all that laws can do to prevent the misuse of the motor car.

When the Newcomb bill was first introduced, some of the largest dealers in the state announced that they would quit the automobile business if the measure became a law. Scores of owners declared that they would sell their cars rather than drive a machine with such a law in existence. Now that the bill is dead, the dealers report that prospects, who have been on their lists for weeks awaiting the action of the legislature, have purchased cars and that business on motor row was never better.

### May Sell New York Taxi Company

A proposition to dispose of the taxicabs owned by the New York Transportation Company to the Connecticut Taxicab Company, together with the stations, rights, garage, machine shop and other property of the New York Transportation Company associated with its taxicab branch, will be submitted to the stockholders of that company next Monday at a special meeting called for that purpose. Over 600 cabs are included. The proposed sale does not include the Fifth avenue bus line or any of its equipment.

Tuesday afternoon representatives of the Fifth avenue line appeared before the Public Service Commission to urge that body to grant it permission to extend its route from Fifth avenue to Seventh avenue so as to connect the terminus of the Hudson tubes with the Pennsylvania station.

In case this is granted the new service will require twenty more buses. The matter was postponed until next Thursday.

Some interesting figures were produced at the hearing to show the volume of traffic over the proposed route under ordinary conditions. On Thirty-third street during one business day 266 automobiles passed eastbound and 425 other vehicles. Westbound there were 252 automobiles and 404 other vehicles, or a total of 1,347. On Thirty-second street there were 888 automobiles and 999 other vehicles; on Thirty-first street there were 460 automobiles and 958 other vehicles. On Thirty-sixth street there were 581 automobiles and 829 other vehicles. Aside from showing the variance of traffic in different streets the figures indicate that 39 per cent. of the total vehicular traffic on those streets is performed by automobiles.

### Milwaukee for Sensible Signals

MILWAUKEE, WIS., March 16—The sensible signal law recently adopted by the city of St. Louis, following the lead set by Chicago, will be introduced here, within a few weeks by the Milwaukee Automobile Club. The major stress will be placed upon the provision for reducing the noise nuisance, although the primary object is to make adequate warning signals obligatory.

### Baltimore May Tax Automobiles

BALTIMORE, MD., March 18—An ordinance is being prepared at the suggestion of Mayor Preston imposing a small tax on motor cars owned by residents of the city. This action of the mayor followed the defeat of the Goslin bill in the State Senate which sought to increase the license tax on motor cars. The ordinance suggested by the mayor would affect 2,029 cars, which is the number of cars licensed in Baltimore. The average price of these cars is fixed at \$900 each.



## Considering the Chauffeur

### Under Present System Private Taxicab Driver Has Considerable Trouble in Making an Honest Living

**He Is Barred From Certain Favored Locations—Company Official Defends Public Drivers**

NEW YORK CITY is considering the problem of allowing a continuance of the present practice of private taxicab stands on the public streets. The matter is in the hands of a special aldermanic committee which has been instructed to investigate the whole subject with the idea of affording a reasonable basis for a new ordinance covering the subject.

The rights and wrongs of the present status present a problem of much complexity, even the taxicab companies themselves being uncertain as to whether the existing arrangement is correct or otherwise, or, if it should develop that it was right, whether or not it is advantageous from the viewpoint of the companies.

From time to time there have appeared articles in the metropolitan press showing what vast sums have been spent for exclusive stand privileges, indicating that the cost to the companies is considerable and naturally such cost must be borne in the final analysis by the patrons of the service.

The private taxicab drivers can see no justice in the arrangement that bars them from certain points of vantage and at a recent meeting of the committee one of the leading speakers, the driver of a private car made the following illuminating remark:

"Gentlemen," he said, "give us a whack at all the business in our line and we will be honest."

The speaker was a man of much native shrewdness and had a direct way of stating his facts. He was audibly cheered by a group of men engaged in similar work.

From his remark it would appear that the private taxicab driver has his troubles in making an honest living.

In view of the recent alleged wave of crime in New York and the emphasis that has been laid on the part taken in it by criminal taxicab drivers, THE AUTOMOBILE presented the above statement to the New York Transportation Company with a request for comment.

#### Chauffeurs Sober and Industrious

A. K. Wing, general counsel of the company, touched upon some of the matters involved and said:

"I will venture to say that there is not a more sober, industrious lot of workmen engaged in any line of work in New York than the force of chauffeurs employed not only by our company but also by almost all of the similar concerns in New York.

"This must be so as the result of our system of selection and supervision. In the first place, applicants for positions as chauffeurs must present references which are carefully scrutinized. If they are satisfactory the applicant is put to work as conductor of one of the Fifth avenue 'buses. When he has proved himself in this station, he is moved up to chauffeur in the 'bus line when a vacancy appears. After serving an adequate period in this work he is pushed up to the stage of chauffeur and given a taxicab.

"It would be entirely impossible for a known criminal to get on our payroll and if any employee developed criminal tendencies he would be promptly and automatically apprehended. Anybody can see that if a man is constantly aware of the fact that he is working for a responsible company and constantly traceable in several different ways and obliged to account for his time on pain of being handed over to the police as a suspicious

character, he must obey the law and the rules of the company.

"In the early days of this business there were many undesirable connected with it as chauffeurs, but these have been eliminated by careful observation and supervision. Every slip and adverse report is entered upon the record of each man and, curious as it may seem, every good word that comes concerning him. One would hardly credit the statement that even taxicab chauffeurs occasionally receive high praise for skill, attention to duty and promptness, but it is undoubtedly true.

"It is a business where as a general rule the man is satisfactory just as long as he delivers first rate service to patrons and employers. Under such circumstances it is rare indeed that praise should be bestowed for simple duty well done. But, on the other hand, if he makes a slip, he will surely hear of it through the complaint of the customer."

In Mr. Wing's opinion, if taxicabs and taxicab drivers are responsible for recent criminal events, the cabs and drivers are not those of the big companies operating in New York.

On the subject of the proposed new ordinance he was non-committal, stating that it was too complex a question to be decided off-hand and without most careful investigation.

#### Punishing Automobile Thieves

MILWAUKEE, WIS., March 16—To place the motor car thief on the same plane as the horse thief will be the intent of a city ordinance about to be introduced in Milwaukee, and later in the state legislature by the local automobile club. At present the Wisconsin laws provide a maximum penalty of 15 years for horse stealing, while the maximum penalty for stealing a machine is a fine of \$50 or 30 days in jail. Within a week four cars have been stolen in Milwaukee and in no case was the penalty harsher than a fine of \$25 and costs. However, the same judge is fining all speeders the limit of \$25 and costs and promises to send second offenders to jail. The ancient policy of giving the motorist the worst of it still prevails in progressive and modern Milwaukee.

#### Gasoline Inspection Car at Panama

Gasoline is the motive power used in an important branch of canal construction on the Isthmus of Panama. As will be seen in the accompanying picture the United States engineers are using a small type of locomotive for inspection work and other similar service.

The car shown is equipped with a combination body capable of accommodating eight persons with instruments, supplies and tools.

The gasoline locomotive makes fast time on occasion, having covered one stretch of 5 miles in 3:47. For the transportation of officers and inspection work this type of machine has displaced horses almost entirely in the canal work.



Gasoline inspection car in use on Isthmus of Panama

## Buyers at Boston Truck Show

### Visitors From All Over the Country Will Spend Some Time Studying New England Conditions

**William P. Kennedy Discusses the Problem of Handling  
Coal Economically by Motor Truck**

**B**OSTON, March 18—Boston's commercial vehicle show starts today on its final three days and when it ends next Wednesday there is no doubt but what the men identified with this part of the industry will feel satisfied. Yesterday they had a chance to meet and compare notes in the hotels and from what they said it was a very optimistic crowd.

The men who have come here from the west are the more surprised, for they state that compared with the New York and Chicago shows the Boston exhibition produces more real buyers. The representative of a light delivery vehicle said that one in every three that stopped at his space was going to get some sort of a vehicle within 60 or 90 days.

Another man who is here from out of town with a big truck said that the truck business in New England must be going to enjoy a big boom in the near future and that the men who secure agencies during this show will be fortunate because so much will be accomplished by the factory representatives this week, making the first sales easy for the agents.

#### The Show a Great Object Lesson

Unlike some shows in the past where makers were ready to close up agencies quickly this exhibition presents a different aspect. The factory men find that there seems to be an eagerness to get truck lines on the part of many and so they are holding off until they can look over the field thoroughly and get a good idea of the standing of the men after their products.

When the show ends there will not be a rush homewards, according to what has been said by some of the men. The trucks in the show will all be disposed of no doubt and then a number of the factory men will spend some weeks here looking over the New England territory preparatory to dividing it up. It is doubtful if any one agent gets a very big slice of territory now that the evidences of the demand for trucks are so apparent.

The attendance last week was satisfactory. It was not large, to be sure, but the men who went to the show were looking for vehicles. The dealers who have both pleasure and commercial vehicles got some surprises this time when they started talking about trucks. In the pleasure car show appearances counted for a great deal and the explanations about the mechanism were not so very detailed, for many purchasers were familiar with motor construction. But the men who are out to buy trucks are men of business who want to know everything about the mechanism, its structural features; the strength of this, that and the other part; the possibility of wiring getting wet or insulation chafed off; in fact, things that some of the dealers have never given a thought to regarding trucks.

To these dealers it has been a good lesson in getting thoroughly acquainted with every little part of their vehicles. The business men can see possibilities of failure because they have found conditions in their own lines where little things upset an entire business and so they want to be shown. It takes real salesmanship to sell the motor trucks, the dealers find, and that accounts for the fact that a number of the agents are on the job personally.

That the truck field is growing enormously is shown by the large number of vehicles at the show with names of local firms on them. There is hardly an exhibit but has from one to three or more vehicles with the signs on each side showing that the trucks are merely loaned for the week and that when the show

ends they will be put into use immediately. There have been several hotel men at the show looking over busses for the summer resorts and a lot of these will be marketed. Many milk dealers have also been looking over the light delivery wagons, and the rubber tires on these vehicles with the silent motors will tend to solve the noise problem of early morning that is such a nuisance everywhere. The coal dealers have had a session during the week and they visited the show and looked over the new designs for dumping bodies as well as the vehicles. So when the show ends the proportion of sales, all things considered, compared to the pleasure vehicle show, will be just as good.

On Friday night William P. Kennedy, chief of the transportation cost bureau of the American Locomotive Company's automobile department, read a paper before the Retail Coal Dealers' Association of New England which had for its subject the economic application of the motor truck to coal transportation.

#### Discusses Coal Truck Operation

Impedimental operative conditions with which the motor truck has to cope in the coal trade, as well as transportation costs, were discussed. It was brought out that in attempting to supersede horse equipment in the transportation of coal with motor trucks, the vital question is whether or not the conditions of operation can be so modified as to permit of a saving by the use of the machines. Delays in making deliveries and in loading at the yards are big obstacles to the use of trucks. Unloading conditions present the greatest difficulties because they are not under the control of the coal dealers or the operators. Since yard conditions are directly chargeable to the operators there should be no reason why the loading of coal cannot be accomplished with very little delay.

For successful truck operation the dependence upon any hand method of loading and unloading is prohibitive. That facilities can be modified so as to provide for quick mechanical loading is apparent from the number of coal yards which are equipped with hoppers and other similar devices at present. Where such mechanical methods are not used, the dealer must make a large expenditure for yard equipment in addition to buying the motor trucks, if he would use power wagon delivery.

In securing from coal operators reliable information on the cost of transportation with horse equipment there appears to be considerable difficulty due largely to loose and widely varying methods of bookkeeping. The only safe and general way by which the cost per ton can be arrived at is by taking the entire year's cost of operation and upkeep and charging this to the total tonnage delivered per annum.

The whole problem requires segregation of those charges which are constant whether the vehicle is in service or not, and the additional charge for those items which are affected by activity of the machines. To these the fixed charges should be added so as to arrive at a true cost of unit performance.

#### Three-Day Show at Janesville

JANESVILLE, WIS., March 16—The first motor show ever held here was conducted under the auspices of the Rock County Automobile Dealers' Association in the West Side rink on March 14, 15 and 16. Twelve dealers exhibited twenty-one distinct lines of cars. The Janesville Motor Company had twelve cars on exhibition. Agents at Beloit, Edgerton, Evansville and other cities in Rock county made displays. The Janesville show reached hundreds of people, particularly farmers, who are unable to visit the Chicago and Milwaukee shows.

#### Big Hall for Oshkosh Motor Shows

OSHKOSH, WIS.—As a direct result of the success of the first motor show of the Oshkosh Automobile Dealers' Association, held late in February, a large exhibition hall will be provided by business men of Oshkosh, acting in concert with the Oshkosh Chamber of Commerce.



## Trade Is Big at Denver's Show

### Railways Co-operate With Management to Attract Large Attendance of Dealers and Owners

#### Continental Truck, a Local Product of the Electric Type, Attracted Much Attention

DENVER, COL., March 16—The eleventh annual Denver Automobile Show, which opened in the Auditorium on Monday, has attracted the largest crowds in the history of the event in spite of the stormy weather which has prevailed since the second day. The list of exhibits grew up to the last day for entry until the cars numbered 130 at the opening. The 22,000 feet of floor space in the building proved entirely inadequate for the displays the dealers wished to make, and some were not represented at all because they could not secure sufficient room to place their different models. The row of boxes which line the building was filled with thirty varied and interesting accessories and specialties exhibits.

This year's show brings the newest things in the motor world to the notice of dealers and buyers through a much more extended section of the United States than a show of its size in the East, and it is moreover a territory increasing in population at a rapid rate and assuming a constantly growing place in the automobile business.

The Colorado railways co-operated with the management to attract a large outside attendance, and under the one and one-third fare which was offered from surrounding points by the certificate plan hundreds of visitors were brought to Denver for the week. On the third day of the show 900 certificates had been signed by the management, and of these 600 were dealers. Western agents with their headquarters in Denver are taking advantage of the opportunity thus offered to introduce their cars into the surrounding territory. South Dakota and Utah sent dealers as well as Wyoming and New Mexico. An unusually large number of factory representatives were present to help the dealers demonstrate their cars to the public.

The Denver show of this year proved to be more than ever before a commercial proposition for the Denver people who wished to see the developments of the year. This year, however, there are hundreds of visitors with a more serious purpose, and local agents are almost unanimous in attesting the value of the show as a sales booster.

A large rural trade for the year is practically assured by the extremely heavy snows which have visited Colorado in the last few weeks, preparing the ground in the dry-farming districts for bountiful crops and storing ample supply for the irrigating reservoirs in the mountains.

Among the cars seen at the Denver show for the first time were the Flanders electric, the Cole and the American.

In the commercial exhibits, which were placed in the foyer which entirely surrounds the building, the Sampson, Alco, Saurer, Mack, Wichita Falls and the Continental were new to Denver shows. The latter, which is the product of a Denver firm and of which but two models have been made, attracted much attention. It is a gasoline-electric drive; the power is generated by a Westinghouse dynamo run by a four-cylinder Continental gasoline motor. Two Westinghouse motors, each connected with the rear axle by double chains, furnish the direct driving power. The truck shows up-to-date designing in the steel wheels, aluminum chain cases and other features. It is made by the Continental Motor Truck Company, and was designed by R. S. McKeage.

### Syracuse Show Brought Many Sales

SYRACUSE, N. Y., March 16—Today witnessed the close of the most successful automobile show ever held in Syracuse, and what representatives of prominent automobile manufacturing concerns, who are following the circuit, pronounce tonight the second best selling show in the Empire State, it being surpassed in this respect only by Buffalo.

The total number of sales recorded for the show from Tuesday evening to this evening, inclusive, is 144, representing an outlay of \$200,000, while \$100,000 worth of accessories have been contracted for. As for prospectives, the dealers are enthusiastic over the situation, and there is more business in sight than in the case of any previous show. As the dealers express it, the backbone of a hard winter has been broken and opened the way for a strong spring trade. Sales have been made during the week to many residents of Syracuse and vicinity and to visitors from all parts of central, northern and southern New York.

The attendance for the week was 32,000, breaking last year's record, the best previous, by 7,000. New cars were shown this year, never before exhibited here, as follows: Alco, Garford, R. C. H., Marmon, Columbia, Paige-Detroit, Michigan, Krit, American, Firestone-Columbus, Jackson, Marathon, Pierce-Arrow. There were four local exhibitors, The H. H. Franklin Manufacturing Company and The Moyer Company, showing pleasure cars, five and four each respectively, while The Chase Motor Truck Company and The Sanford-Herbert Company each showed three trucks.

Other makes of cars shown, not mentioned above, follow: Oldsmobile, Oakland, Ford, Stevens-Duryea, Hudson-Havers, Cadillac, Velie, Everitt, Amplex, Packard, E-M-F, Flanders, Hupmobile, Overland, Peerless, Stoddard-Dayton, Stearns, Moon, Reo, Rambler, Paige, Brush, Maxwell, Pullman, Regal, Bergdoll, Cutting, Winton, Elmore, Cole, Case, National.

The trucks not previously mentioned were Mack trucks, Ford delivery wagons, Packard trucks, Alco trucks and Reliance trucks.

#### LIST OF EXHIBITORS AT THE ELEVENTH ANNUAL DENVER AUTOMOBILE SHOW, MARCH 11-16

**Pleasure Cars**  
W. W. Barnett, Alco, Stoddard-Dayton.  
Fernald Automobile Co., Maxwell, Columbia.  
Charles Bilz, Franklin.  
Felker Auto Co., Bergdoll, Stevens-Duryea, Waverley.  
Alkire Motor Car Co., Thomas, Midland.  
Cole Motor Car Co., Cole.  
Maxwell-Chamberlin Motor Car Co., Peerless, Haynes.  
R. C. H. Corporation, R. C. H., Hupp-Yeats electric.  
Mathewson Auto Co., Reo, Locomobile, Premier, Oakland, Ohio and Standard electric.  
Overland Auto Co., Overland, Winton, Baker electric.  
Kissell Kar Co., Kissell Kars.  
Fritchle Automobile & Battery Co., Fritchle.  
E. R. Cumbe, Rambler.  
Tom Botterill, Pierce-Arrow, Hudson, Columbus electric.  
McDuffee Motor Co., Chalmers, Stearns.  
Havens Motor Car Co., Dorris.  
Western Motor Co., Abbott-Detroit.  
Colburn Auto Co., National, R. & L. electric.

The Carstarphen Electric Co., Flander's electric.  
Estrado Auto Co., Hupmobile.  
Ford Motor Co., Ford automobiles.  
Stanley Motor Carriage Co., Stanley.  
A. T. Wilson Auto Co., Mitchell.  
J. I. Case Co., Case cars.  
Krebs-Gotshall Motor Car Co., Detroit electric, Lozier.  
Metzger Motor Car Co., Everitt.  
Velie Motor Vehicle Co., Velie automobiles.  
Elmore Auto Co., Elmore.  
W. E. Dinneen, American.  
Geo. E. Hannan, Jackson.

#### Truck Division

Carstarphen Electric Company, General Vehicle trucks.  
Felker Automobile Company, Saurer-Mack, Waverley.  
Stanley Motor Carriage Company, Mountain wagon.  
Wichita Motor Sales Company, Wichita Falls trucks.  
Fernald Auto Company, Sampson.

Continental Motor Truck Company, Continental.  
Charles Bilz, Chase.  
W. W. Barnett, Alco.  
Havens Motor Car Company, Kelly.  
Fritchle Automobile & Battery Company, Electric truck.  
Woeber Car & Manufacturing Company, Auto trailer.  
Colburn Auto Company.

#### Accessories

Capitol Hill Garage, Continental Oil Company, Wyoming Asbestos Producing Company, The McDuffee Motor Company, Kimball Tire Casing Company, Brackett Welding Company, Regent Rubber Company, Carstarphen Electric Company, Better Than Air Tire Filler Company, Continental Oil Company, Fry & McGill Motor Supply Company, Boss Rubber Company, Denver Auto Goods Company, Great Western Oil Company, The A. B. C. Anti-Puncture Company, Transcontinental Chemical Company, Colorado Tire Company, Manly S. Wren, Western Supplies Company, O-Tak-A-Tire Remover, and Brooke Patent Airless Tire.



Weller party looking for air holes and clearing rough spots



Bridging a creek—open water can be seen to the left

## Crossing Lake Erie in an Automobile

### Account of the Experiences of a Party of Adventurous Motorists Who Braved the Perils of the Inland Sea's Ice Bridge

PORT CLINTON, O., March 15—One Sunday afternoon a jolly bunch of young fellows were discussing the events of the day in the hotel lobby of the Island House. It was a very comfortable meeting point, for the temperature of the outside world hugged the zero mark. One of the crowd suggested that the most noteworthy thing that could be done would be to cross Lake Erie in an automobile; Put-in-Bay was spoken of as an objective point. The proposition was soon under development and it was but a few minutes from the time the suggestion was made that the party was ready for the start. B. W. Weller was willing to sacrifice his automobile if necessary to make the attempt. He was accompanied by Captain Ezra Bickford, of the government tug *Oliver H. Perry* and Frank Gernhardt, proprietor of the hotel. It was nearly 3 o'clock in the afternoon when the start was made. Weather conditions were not the most favorable as a snow storm was hanging over the lake and the atmosphere was hazy. Up to this time no one had crossed the lake on the ice between the island and mainland.

No compass was carried by the driver of the car so that without any land as a guide-post, it was necessary to get the bearing of the wind and to time the speed of the car to judge the distance traveled. Should the wind change the party would be at the mercy of their own judgment as to their whereabouts on Lake Erie, like a lost person in a desert.

When leaving the main land it was expected that the trip over to the island and return would be made the same afternoon. Two short planks were carried to be used as bridges in case cracks were encountered. An ax and a shovel were carried to be used as emergency tools. Although the ice was considered perfectly safe at 18 inches thick and would carry a train of cars, the danger that confronted the party from weather conditions and any openings in the ice led the mariners to believe the undertaking a foolhardy one.

#### Lost to Sight in the Mist and Snow

After the start a great many people watched the car till it had vanished from sight. The run to the Island was scheduled to take less than an hour, but 2 hours elapsed and nothing was heard from the machine and its human load, and their friends

at Port Clinton naturally became anxious as to the safety of the party. Telephone calls to Put-in-Bay brought no news of the arrival of the party. A lookout was stationed along the shores of the island, telephone messages sent east and west informing the people living along the shores of the lake to be on the lookout for any object which might have the appearance of an automobile. Fearing the autoists had lost their way in the storm, as snow was then falling, the fire alarm was sounded at intervals. The whistle, which could be heard for 15 miles, would surely give the lost people an idea as to where Port Clinton was and thus aid them in getting their bearings.

It was nearly 5.30 p. m. when a 'phone message from Put-in-Bay told of the discovery of the party and its automobile, as it had been sighted on the south side of the island just opposite from Hotel Victory. The car was snow-bound and an effort was being made to free it. Being overtaken by darkness, the machine was abandoned and the party went ashore, where they were given a royal welcome by the inhabitants.

#### Dog Followed Master in Venture

It was Tuesday noon before the return trip was attempted and after a run of a couple of hours on the lake, the south shore was reached. The automobile had made the trip to and from the island, thus establishing a new record. Much comment through the columns of the daily papers was heralded and the trip was as much lauded as a North Pole expedition.

Buster, the most faithful dog of the Island House, when he found his master had departed, set out after the auto. The trail took him far out on the lake before he caught up with his master, he would not then ride in the car and he followed all the way to the island afoot. When the destination was reached he was foot-sore and tired but on the return trip he was not content to remain in the car and kept up his interest by jumping to the ice and chasing the car.

Charles Stensen, who was also after fame, established a world's record on the following Sunday when he made the run from Port Clinton to Put-in-Bay, a distance of 13 miles, in 19 minutes. He drove a small runabout built for two, but carried four people on this speed run, two of the passengers hanging



to the running boards. At times a speed of 45 miles an hour was reached.

To cross to the Canadian shore was the next project which demanded the attention of the venturesome automobilists. It was on a Thursday morning that John P. Cangney and his party of four started, as they told their folks at home, for a trip to the islands. After leaving Put-in-Bay and Middle Bass the automobile was headed for Canada. Pelee Island was the first stop across the border. Here one of the party complained of not feeling well, and a doctor was consulted. The patient was soon able to continue the journey, and after much persuasion the doctor consented to join the party. He was promised that he would be landed at the island again the same day. Kingsville was the destination, but owing to the rough ice and snow banks the line of travel was diverted and Leamington was aimed for. Weather conditions were not the most favorable as it was snowing and the atmosphere very cold, thermometers still holding to the zero mark. The party carried a compass and with the aid of this instrument their bearings were held, otherwise they would have been lost several times. It was found that the compass behaved very badly when near the car so that it was necessary to remove it several feet from the machine before the results could be determined. The exposure was very hard on the occupants of the automobile. Several times the necessary distance was traveled before the shore was reached, and the hour was so late that it was out of the question to consider the return trip that day.

Upon their arrival at the Canadian port the party visited the custom officer, who informed them that if they remained in the Dominion many hours a new license would be required for the automobile. As soon as the news of the arrival reached the ears of the inhabitants the party became very popular and were looked upon with as much interest as real explorers. Press correspondents were soon busy and the news of the successful venture was being sent abroad. Through a message to the United States the home people learned of the travelers' safety. Up till this time nothing had been heard from the party since starting on the venture, and it was with much anxiety that the mothers and wives were waiting for news. Messages that were to have reached them on the same night were not delivered until the following morning.

#### [Saved a Woman Dying from Cold

The return voyage was made the following day. Leaving Leamington at an early hour, Cangney and his party started for Pelee Island, where they were to leave the doctor, who still was one of the party. While en route several sleigh loads of lumber and fuel were passed, as this is the only means of traffic between the island and mainland during the winter months. One load had as a member of its party a woman who was suffering from exposure. She was transferred to the automobile, made as com-

fortable as possible and taken to her home on the Island. It is doubtful whether she would have been able to withstand the slow journey of the horses over the rough ice with the weather steadily growing colder.

At one place, some distance from Pelee, a wide crack was encountered and had it not been for the planks which had been left by the driver of one of the sleighs, the party would not have been able to cross over, the planks used being 16 feet in length.

At Pelee Island the party was given a welcome and a reception dinner. The return home was then continued. Stopping at Put-in-Bay and other islands which lay in line with Catawba Island, the automobile party made known that all was well and that the trip had been one of much venture and little mishap.

#### Feat Popularized Lake Ice Travel

After reaching Catawba Island the party journeyed to Port Clinton, where a landing was made. Since the feats above recorded were carried successfully through the sport has been fast gaining much popularity on Lake Erie. Routes have been established for carrying passengers and commercial products to and from the islands. Daily trips are being made and in but one instance has any person suffered any personal injuries; this was when Captain Bickford was thrown to the ice by the overturning of a car, when it became unmanageable and the driver lost control. He was confined to his bed for a number of days from the bruises. Another mishap was with a passenger car which became disabled and had to be abandoned on Lake Erie, near Green Island. The passengers were transferred to bobsleds and ferried to Put-in-Bay, their destination. The shipwrecked car was then left on the ice fields for two days before it was towed to Port Clinton and put on dry-dock for the necessary repairs.

A strange occurrence was the colliding of an automobile and an ice boat. The ice boat was disabled and had to be towed to port by the car.

To indulge in joy riding on Lake Erie one must go well prepared as the frigid winds are of the most penetrating nature and a person is soon chilled to the bone. Traveling on the ice in an automobile is a fearsome proposition at first, for the ice can be heard cracking in all directions; but when frozen to the thickness of 18 inches there is no real danger, apart from the cracks that are likely to be encountered.

#### Quakers' Bright Racing Prospects

PHILADELPHIA, March 16—Between the Quaker City Motor Club, the recently organized Belmont Motor Club, the South Jersey Motor Club and the Philadelphia Automobile Trade Association, there promises a racing season of unusual activity so far as Philadelphians are concerned.



Cangney and party meet an ice yacht

A particularly bad spot where 12-foot planks were necessary

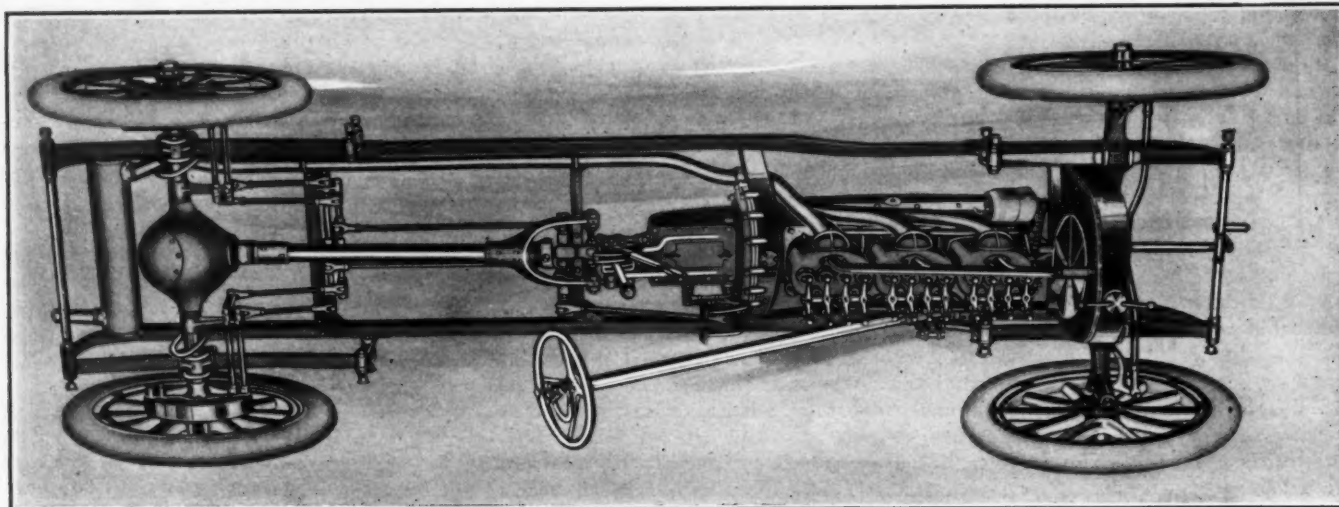


Fig. 1—Plan view of the largest chassis produced by the Norwalk concern. Note universal joint construction

## Norwalk Features Big Underslung Six

Motor of 63 Brake Horsepower Fitted to Chassis of 136-Inch Wheelbase. Ball Bearings Used Throughout

**M**ADE in Martinsburg, W. Va., below the Mason and Dixon line, the Norwalk car is distinctly a Southern product. The Norwalk Motor Car Company, which makes it, is particularly interested in the six-cylinder proposition and has brought out a car of this type which also embodies the popular feature of being underslung.

The motor which is used in connection with this car has its six cylinders cast in pairs. The bore is 4 inches and the stroke is 5 inches, 63.5 brake horsepower being delivered at 1,280 revolutions per minute. The water jackets are cast integrally with the cylinders. The construction of the valves and the valve-operating mechanism is well shown in Fig. 2 where the right side of the motor is depicted. The cages of the valves are removable while the mechanism, being entirely external, is readily accessible for inspection and repair. The valve rods leave the crankcase on the lower right side of the motor as shown in the illustration, passing through long guides. The rods terminate in their upper extremity in the rocker arms located on the tops of the cylinders. The valve springs are set on the opposite side of the rocker arms and, being short, tend toward quick action in closing the valve and keeping the follower on the cam.

The crankcase is an aluminum casting with hand-holes in the

side which are large enough so that the crankshaft bearings and the connecting-rods may be reached without taking down the motor.

The motor is oiled by a combination of the direct and splash-feed systems. The oil is contained in a reservoir in the crankcase. From there it is taken by a gear pump driven from the camshaft and sent to the main bearings. After passing through these bearings, the oil flows into the splash troughs, of which there is one below each cylinder. Scoops fitted to the bottom of the connecting-rods dip into the pools of oil in the troughs and throw it up into the cylinders where it is caught by the pistons, thus lubricating this part of the motor. The pump supplies the oil rapidly to the bearings so that there is always an excess amount of oil. This drains back to the reservoir, the system being kept constantly in circulation. Before the oil passes to the pump, it is passed through a strainer and any accumulated impurities removed. There is an individual lead to the gearcase.

### Positive Circulating System

**W**ater cooling is used on the motor. The circulating system is operated by a centrifugal pump. The radiator is of the square-tube type and the water tubes are large, affording a large cooling surface and allowing a free passage of the water through all parts of the system. The water in the radiator is cooled by a nicked fan, 16 inches in diameter and mounted on ball bearings. The fan has six blades. The radiator and the pump are both fitted with grease-cups so that all the water may be drawn off when desired. A double ignition system is used on the motor. Two sets of spark-plugs firing simultaneously are employed. Ignition by means of all the plugs can be had either from the magneto or from the storage battery. The storage battery is used for starting purposes in this manner the same as in the usual dual system except that for starting two sparks are furnished instead of one in each cylinder.

The carbureter is of the Stromberg two-jet type designed for six-cylinder cars. As may be seen in the illustration the carbureter is water-jacketed, as well as the intake manifold. It is mounted low on the right side of the motor so that there will be flow from the tank at all times regardless of the slope upon

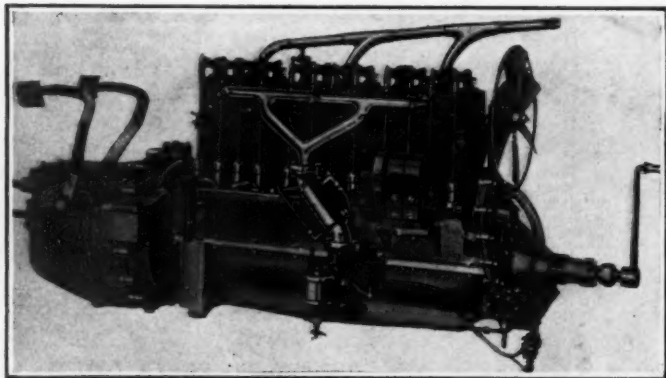


Fig. 2—Intake side of the six-cylinder motor



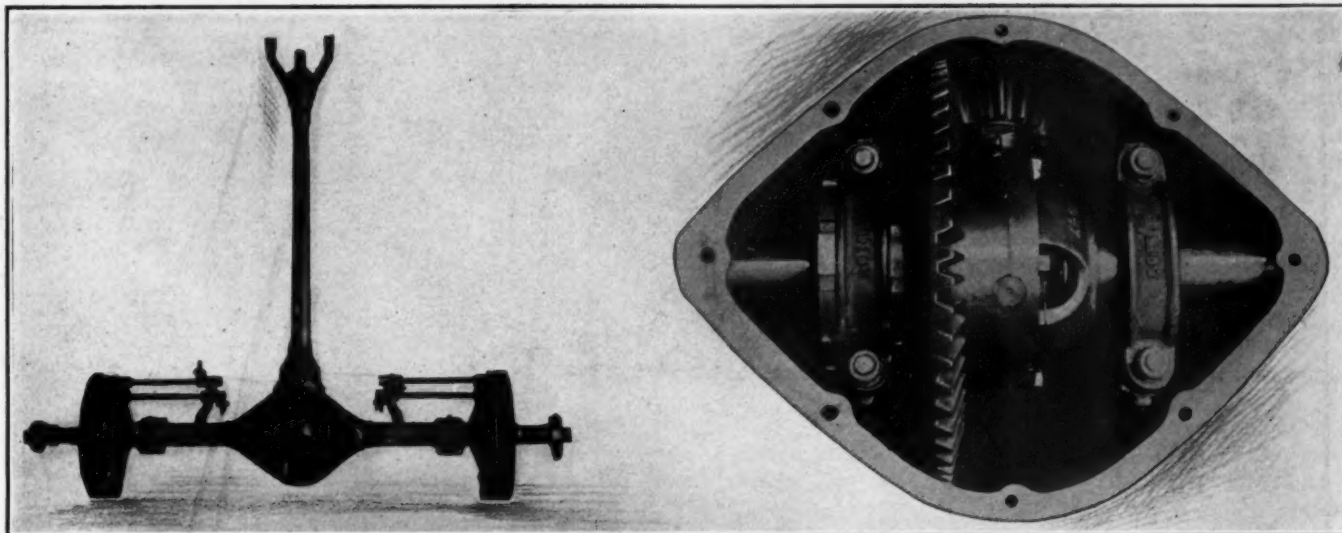


Fig. 3—The rear axle with torque members and a view of the differential gearing

which the car may be traveling. It may be controlled from the dash, the air supply being made to conform to the speed and load at which the vehicle is traveling. In order that the mixture be as uniform as possible, the carburetor is water-jacketed, as is the inlet manifold up to the Y flange.

As far as the fittings and appearance of the motor are concerned, all the piping, the valve-lifting mechanism, rocker arms, pet-cocks, water-pump, fan, grease-cups, nuts, etc., are all finished in nickel. A lighting dynamo is also fitted to the left side of the motor. It is driven off the camshaft by a silent chain. The timing gear case is bolted to the front of the motor in the usual way and contains a train of six pitch, 1-inch-face wheels. The cylinders are enameled in gray. The whole power plant is hung by a three-point suspension. Two arms in the rear are secured to the main frame while the third point of suspension is formed by a large bearing at the front end of the crankcase and centered on the crankshaft. The motor, clutch and gearcase are all bolted together, giving a unit power plant construction.

#### Multiple-Disk Clutch Used

The clutch is of the multiple-disk type having 28 saw-tooth steel disks 8 1/4 inches in diameter. It is held in engagement by an 800-pound spring controlled by compound pedals.

The power is delivered through the clutch to the gearset which is capable of three speeds forward and one reverse. Direct drive is on high speed. The shafts in the gearset run on imported R. I. V. ball bearings, while the shafts are of chrome-nickel steel. The splines on the sliding shaft of the gearset are cut integrally

with the shaft. The gears are chrome-nickel steel, six pitch and 15-16-inch face, having chamfered edges and rendered accessible by means of a large cover-plate which is readily removed.

The drive is taken up on a straight line through a universal joint of the single block type. The propeller shaft is of 1 1/2-inch chrome-nickel steel enclosed in a torque tube and running on R. I. V. annular ball bearings. The drive shaft delivers power to a floating rear axle. The latter has nickel-steel driveshafts 1 5/8 inches in diameter and driving gears of chrome-nickel steel. All the bearings are R. I. V. with individual thrust collars. The differential gearing is covered by an easily detachable housing for inspection purposes. The gear ratio is 3 1/2 to 1 regularly although other gear ratios are furnished to order.

Two sets of brakes are fitted, both being of the inclosed, inter-expanding type acting on the rear wheel drums and faced with Raybestos. The brake drums are 17 inches in diameter and 3 inches wide. The brake rods are adjustable through ratchet quadrant adjustment points fitted on each individual brake lever.

The front axle is a one-piece drop forging, I-section, 2 3/4 inches deep and 1 3/4 inches wide. The wheel spindles act on 1 5/8-inch R. I. V. ball bearings. The front wheels are inclined 2 degrees. The front springs rest on top of the axle while the rear are underslung. Front springs have 8 leaves, are 2 inches in width and 35 inches long; the rear have 9 leaves, are 2 inches wide and 46 inches long. The wheels are of the artillery type, having demountable rims and 12 spokes. They take tires 40 inches by 4 1/2 inches, front and rear. The wheelbase is 136 inches and the tread 56 inches.

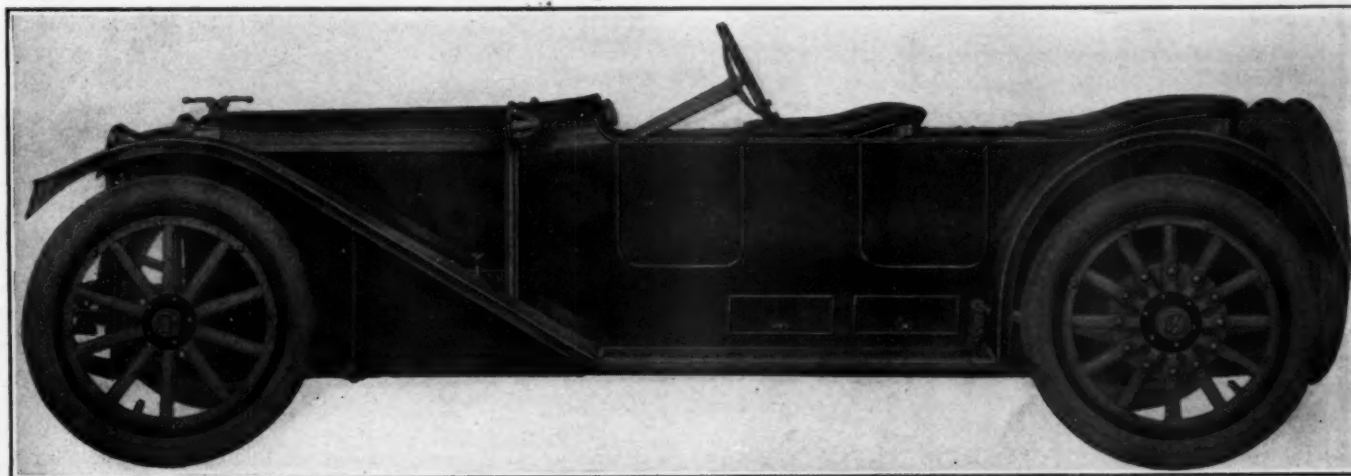
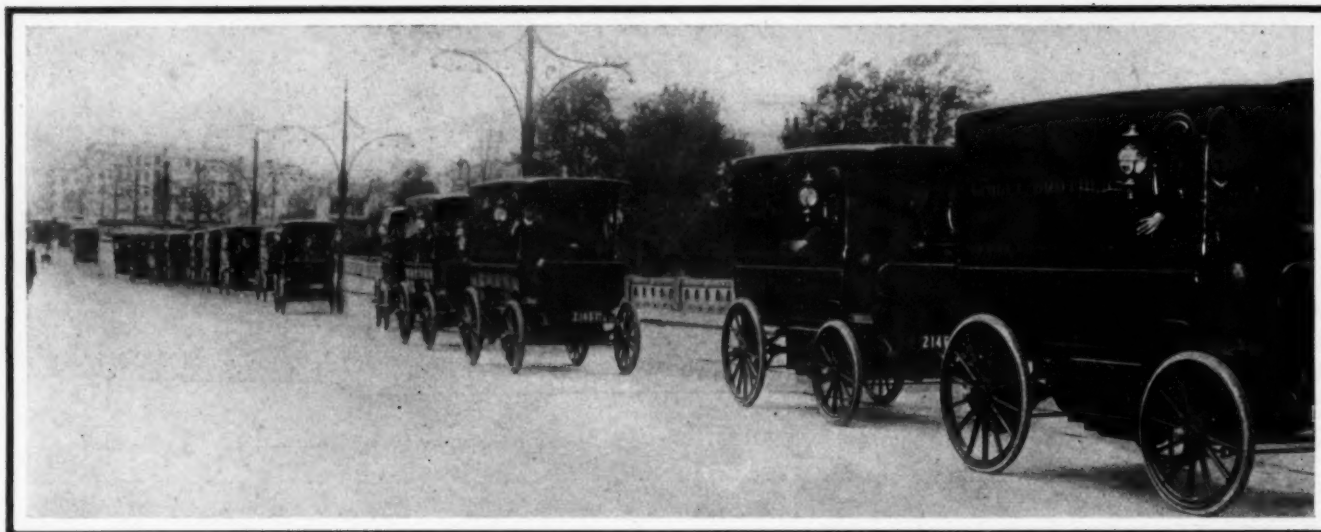


Fig. 4—Showing the six-passenger foredoor body on the Norwalk six-cylinder chassis



Line-up of some of the Studebaker delivery wagons used by Gimbel Brothers in their city delivery system

## Motor Delivery in Gotham's Big Stores

Analyzing the Automobile Service Systems in Use in Gimbel Brothers' and the Greenhut-Siegel Cooper Establishments

**I**N the issue of February 8 there was published a résumé of the development of automobile transfer and delivery service in some of the large department stores of New York City. Another phase of automobile delivery service is presented herewith. It deals largely with the electric truck. One very pertinent fact that developed during the investigation of the systems outlined below was the fierce blow given to the horse. One instance is cited where on a long, heavy pull, a 3,000-pound gasoline truck now performs the work formerly done by a 1-ton wagon and eight relays of two-horse teams, and the automobile delivers 50 per cent. more service than the other equipment.

In the accompanying article the experience of Gimbel Brothers, Greenhut-Siegel Cooper and other great department stores is used.

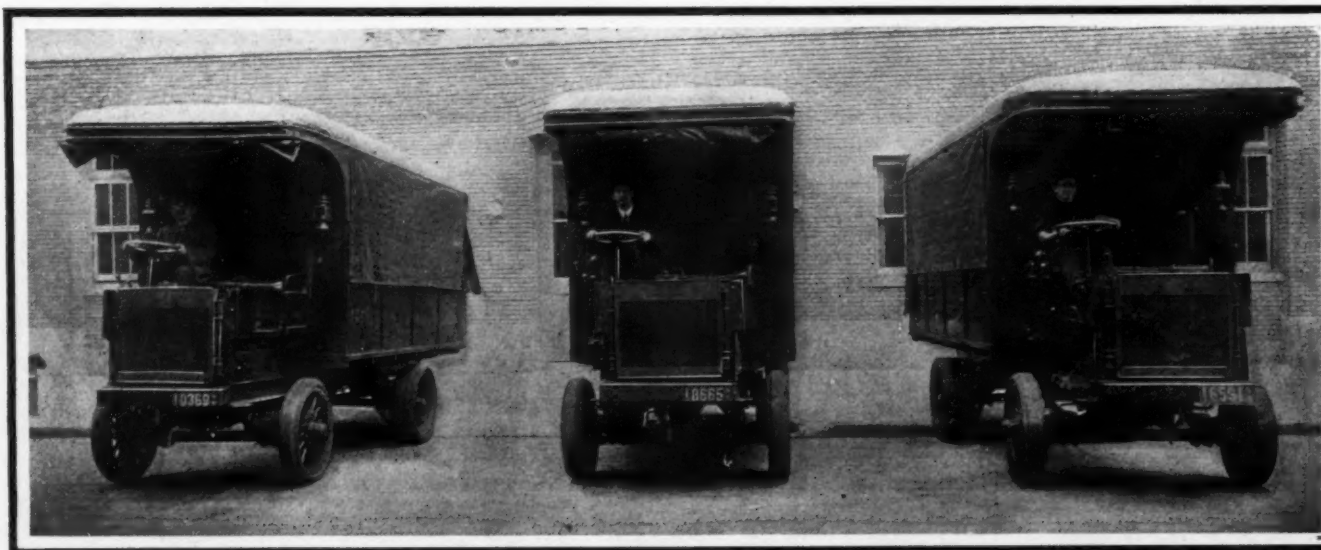
Something over 1,500,000 miles are covered in the course of a

year by the automobile trucks used by the New York establishment of Gimbel Brothers for transfer and delivery work. In round figures the cost is 50 cents a mile, but the Gimbel system of charging for transportation includes a vast array of items which are not usually included in such total costs.

As a matter of fact, the operative and maintenance costs of the Gimbel service are well under the level of cost estimated for such operation by the manufacturers of the various trucks used by this store.

### Modern Delivery Equipment

**B**ut in addition to all the other items charged, the Gimbel establishment includes every item of expense attending the delivery of packages from the time the purchase is made until it is in the hands of the buyer. Thus the wages of packers, dis-



Three of the 3 1-2-ton Alco trucks which constitute part of the delivery fleet of the Gimbel store



tributers, sheet-writers, transfer service, and garage rentals are listed along with the wages of drivers, helpers, upkeep, insurance, maintenance of the delivery belts and escalators, interest, sinking fund, store space occupied and accounting and supervision. These items are all in addition to the regular charges for fuel, oil, current, tires and replacements.

The firm of Gimbel Brothers uses one of the most complete automobile transfer and delivery services in the world. It is now exclusively done by automobiles. When the first battery, consisting of sixty-six Studebakers, twelve Lansdens, five Autocars and five Alcos, was installed the project was regarded as gigantic and revolutionary. Since then eight more Alcos have been added, with eleven Studebakers and twenty Whites. At the present moment some further increase of the battery is in contemplation.

### How the Trucks Do Their Work

Gimbel service is comparatively new, dating from the last of September, 1910, when the brand-new cars were put to work. So far there is not a single absentee in the line-up. Every car that started work in September, 1910, is still on the job delivering

N. J., on the west, to Far Rockaway, L. I., on the east, and from the southern point of Staten Island on the south to Stamford, Conn., on the north.

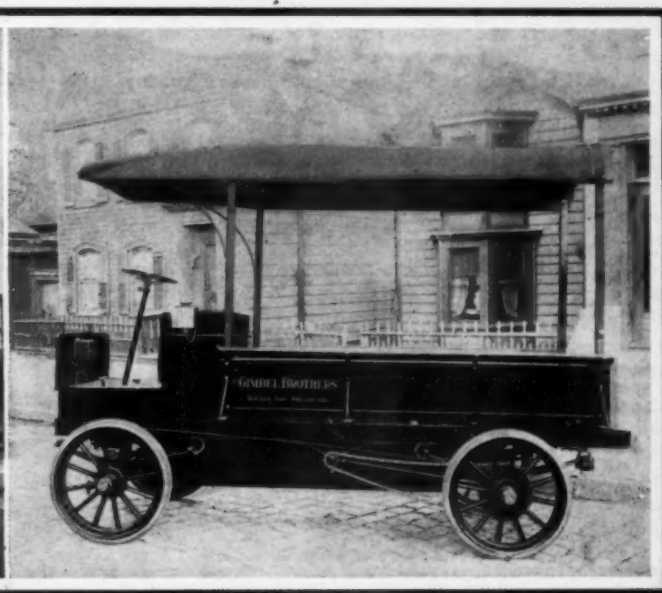
There are six great distributing depots located at convenient points within this territory. These are at Roseville, N. J., 15 miles from headquarters; Bronx, 9 1-2 miles; White Plains, 28 miles; Flushing, 9 miles; Brooklyn, 8 miles, and Hackensack, N. J., 15 miles.

Extending from the store itself and surrounding each of these distributing depots are series of delivery routes, regularly covered by light cars. In addition to these regular routes there are special routes to various points in the suburban territory not otherwise covered.

Taking the types of service in order as they are mentioned above, the work is divided about as follows: In the freight service the six 3-ton Studebaker electrics, limited to an average of not far from 9 miles an hour, and the five 3 1-2-ton Alcos, with a speed of a trifle over 10 miles an hour, are used. These eleven cars handle practically all of the heavy, slow hauling required by the store. They travel between the freight depots, steamer docks and the warehouses of the company, and in times of stress the



Auto car 1 1/2-ton gasoline truck, as used for delivering goods to the distributing depots



Lansden electric delivery wagon with a capacity of 1 ton, chiefly used for city delivery work

practically its initial service and all the more recent acquisitions are performing the duties assigned to them.

A tabulation of the makes, numbers, sizes and types is given below:

Make	No.	Capacity	Type
Studebaker	38	1000 pounds	Electric
Studebaker	33	2000 pounds	Electric
Studebaker	6	6000 pounds	Electric
Lansden	5	1000 pounds	Electric
Lansden	7	2000 pounds	Electric
Total electric	89		
Autocar	5	3000 pounds	Gasoline
Alco	5	7000 pounds	Gasoline
Alco	8	4000 pounds	Gasoline
White	20	1500 pounds	Gasoline
Total gasoline	38		

Total trucks, 127.

Total cost per unit per annum, \$5,905.

Total yearly mileage, electric, per car, \$10,500.

Average daily mileage, electric units, 35.

Yearly mileage, gasoline trucks, per unit, 16,500.

Average daily mileage per gasoline unit, 55.

There are four types of service required of the Gimbel trucks—first, freight transfer; second, depot transfer; third, urban delivery, and, fourth, suburban delivery.

The limits within which free delivery is made includes about 800 square miles of territory and extends from Morristown,

gasoline cars are used to carry bulky freight to the distributing depots and in suburban furniture delivery work.

The electrics make about 30 miles a day and the gasoline cars about 40 miles. The routes are through dense traffic, particularly those traveled by the electrics.

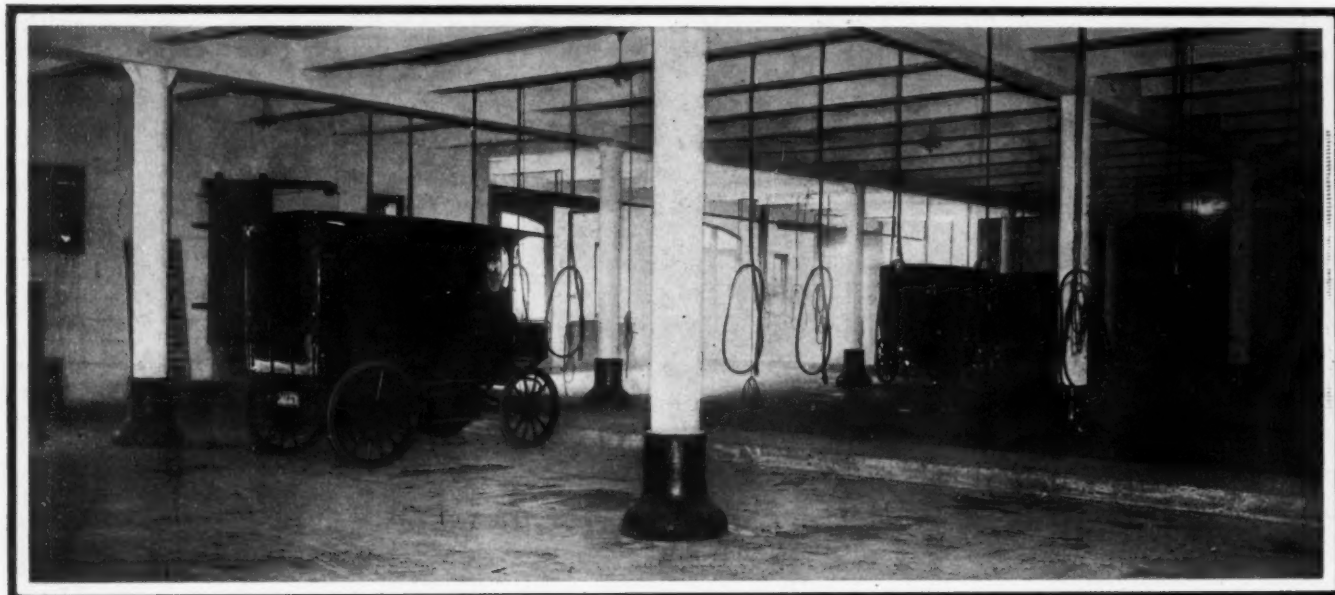
The depot transfer work is done by the 2,000 and 4,000-pound units. The bodies of the trucks are large enough to accommodate twelve wicker hampers in each case. These hampers are about 3 by 3 by 4 feet and into them are packed the wrapped and marked goods destined for certain routes of delivery radiating from the particular supply depot.

Only one of these depots takes as few as twelve hampers of goods every day and one is so large that it requires three round trips a day for six of the units, or 216 hamper loads a day.

The goods are placed in the hampers at headquarters and are loaded into the trucks with very little loss of time, the whole operation being accomplished in less than 1 hour. This includes the packing, listing and loading of the hampers upon the trucks.

### Rapid City and Suburban Delivery

The third type of service is the city delivery. This is done by 1,000-pound electric wagons and covers Manhattan Island south of Harlem or Washington Heights and the lower Bronx, as



Interior view of the Gimbel Brothers' garage showing provision for quick and efficacious washing of the cars

well as Brooklyn, west of the supply depot. Curious as it may seem the urban delivery is only about half the total.

The suburban delivery is done with the White 1,500-pound cars, equipped with single pneumatic tires on the driving wheels. These cars are not used exclusively in that service, but the bulk of their number is so used. The service is trying; mileage high and speed rapid.

The experience of the company with pneumatic tires has proved satisfactory so far despite the higher cost. It is said that where high speed is required, as in this branch of the service, the pneumatics carry the car without wracking it while solids would render the whole mechanism worthless in a short time.

In the administration of the department the rule against excessive speed is rigidly enforced. There are carburetor governors on some of the gasoline trucks and the recording instruments installed on the others are especially designed to guard against high speed. Under the rule, 15 miles an hour is the limit of speed for the 1,000-pound cars; 12 miles for the 1-ton

wagons and from that down to 9 miles an hour for the largest cars.

Figuring the mile cost at 50 cents, the delivery service of Gimbel Brothers seems high, but the operative cost runs down to an average of 6 cents a ton mile, if the extra items are excluded. Maintenance, sinking fund interest and insurance bring the average to 12 cents; garage rentals, wages of operating employees and all incidentals raise it to 28 cents, and the remainder of the wagon-mile cost must be charged against the various extra expenses in the process of delivery.

In a brief sort of way they are included in the giant machinery for delivery that is really a part of the system in vogue.

In the first place, when the customer has completed his purchases, the goods bought are itemized and listed on a delivery tag. The first process after the sale is packing, wrapping and recording. This is done by hand and in the aggregate the cost amounts to a material item.

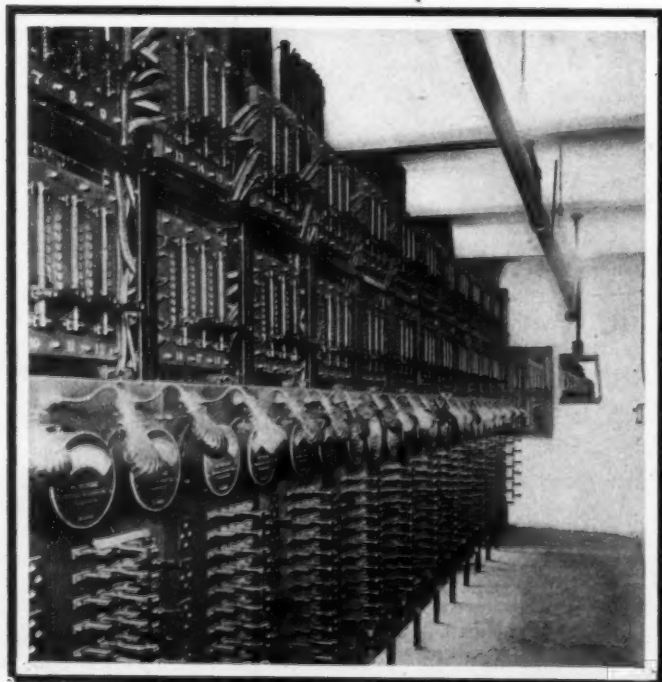
The goods to be delivered are placed upon an endless belt that runs around the delivery room. The sides of the trough through which the belt runs are raised so that packages cannot fall off before reaching their destination. The packages are divided into two classes by the man in charge. First, the goods all ready for delivery, and the other composed of goods upon which something further is required to be done. The distributor separates the classes and from the packages ready for delivery divides the goods on broad territorial lines. There are several belts running away from his station, one of which conveys goods to the city-delivery router; another to the router for the territory of each delivery depot. These routers are men whose knowledge of city geography is uncanny. They know the numbers on all streets and avenues in each block and when the belt carrier brings them the packages, they deftly mark a route number on the packages as fast as they come.

#### Drivers Take Responsibility

Other clerks sort out the packages for each route and place them in sheet-iron cars that stand in little stalls clear across the sub-basement of the big store.

On the outside of the aisle the routes are divided into sections corresponding with the iron cars and the front of each section is covered with heavy steel screen.

When the driver is ready to receive the goods he checks them over and receipts for them, a sheet-writer making a detailed record of the transaction. The car is then wheeled out of its stall and the driver pushes it to an escalator which carries it to the street surface.



View of the elaborate switchboard of the Gimbel Brothers' garage



It takes a good driver a half hour or more to load his car for city delivery, because he has to arrange the packages and bundles so that he need not spend much more time when it comes to the actual deliveries.

Of course, it would be possible for the driver to heave the parcels into his car in 2 minutes, but the extra time he spends in arranging the load saves itself several times before the load is all delivered.

The same procedure is followed in packing goods upon the truck at any of the delivery depots.

The whole cost of this system is charged against deliveries, and for that reason it is not unlikely that the per package cost, estimated on a basis of ton-miles delivered, is not far from 10 cents.

### Greenhut Practice of Delivery

**G**reenhut-Siegel Cooper Company, one of the largest retail department stores in the world, has progressed slowly in the sense of adopting the use of motor vehicles in its giant transfer and delivery systems. The reason for this lies in the fact that early in the history of automobile manufacture the company tried some experiments that proved unsatisfactory. A few foreign-made trucks were installed and their service was augmented by several different kinds of early American cars.

When some mishap occurred to the foreign cars that could not be repaired locally it often happened that the imported cars would be laid out for weeks at a time, waiting shipments from their factory. In such a project as that of Greenhut-Siegel Cooper promptness and certainty of delivery are essential and the problem resolved itself into the simple proposition: A certain amount of goods requiring immediate delivery and some of the equipment necessary to deliver the goods out of commission.

For one reason or another the early American cars did not measure up to requirements and the result was that all the gasoline cars installed were sold off and even today the main reliance of the company is placed in horse delivery.

The company covers 600 towns and villages centering in New York and, despite the unsatisfactory experience with gasoline trucks, the company has found it advantageous to install a large battery of electrics to help out the horses.

This consists of six 1-2-ton General Vehicles, six 1-ton cars of the same make and five 3 1-2-ton General Vehicles. The use to which these cars is put is the long-haul business and heavy freighting.

The six 1,000-pound cars do an average slightly greater than 35 miles a day and are engaged in work between the various depots of the company. The hauling is not actual delivery work



Goods are transported in hampers to the various distributing stations

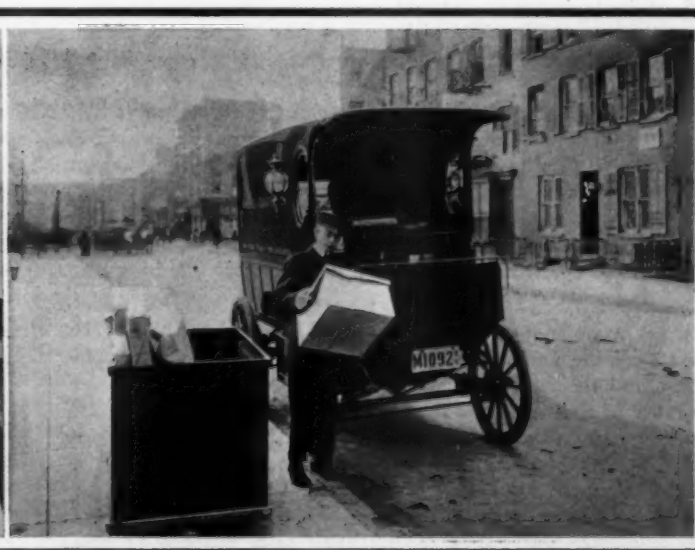
in the sense of house-to-house deliveries, but it is closely associated with such work in that the service performed was formerly done by horse-drawn vehicles and, by relieving that branch of the service, it allows more efficiency in the actual delivery work by releasing some of the horses for that purpose.

The annual cost of such a truck may be stated in this way: Tires, \$145.60; current, \$122.35; oil, grease, waste, etc., \$30; renewals—chains, \$25.20; gears and sprockets, \$46; bearings, \$22.65, and batteries \$187. All told, this makes a total of \$578.80. Basing the service on an average of 35 miles a day, or 10,500 miles for 300 days, the wagon-mile cost figures slightly over 5 1-2 cents and the ton-mile, based upon the loaded wagon-miles delivered, would be 22 cents.

The items enumerated above constitute those usually included in operation and maintenance, but the actual total cost of the service ought to include writing off the cost of the truck on a basis of 10 per cent. per annum, which would figure \$220; interest on investment, \$66; fire and liability insurance, \$122, under the head of fixed charges. The total under this head should be \$408 a year.



Driver taking out of his bin the goods to be delivered



Boys arrange the packages in the delivery wagons

Besides this there should be an item covering rent, heat and light of \$88 and garage labor \$232. Then also the wages of the driver, estimated at \$750, makes the total cost of 10,500 wagon-miles \$2,056.80. This averages \$6.857 per day; .196 per wagon-mile; .392 per ton-mile.

Fire insurance costs approximately 1 per cent. per annum on the cost of the vehicle, and complete liability insurance is rated at about \$100 a year.

The renewal figures submitted include new batteries each year, electrolyte, distilled water, etc. On new set of tires each year; chains every year; gears and sprockets every 18 months, and bearings every 4 years.

The item of garage labor contemplates the labor of three men for ten vehicles and the figures are based upon a minimum of ten cars in service.

#### Cost of Store's Motor Delivery

This company uses six wagons of this size and six of 1-ton capacity. The latter cars make a proportionately better showing than the small wagons because they are able to carry larger loads. The 1-ton trucks deliver an average of 33.6 miles a day, or 10,140 wagon-miles a year. Working only one way on each trip, this would give a total of 5,070 ton-miles a year. The tires cost \$221 and the renewals are proportionately higher than they are in the smaller cars. Dividing the total expense into four heads, it will be seen that the fixed charges, explained on the same basis as was used in defining the cost of the 1,000-pound wagon, amount to \$470.50 per annum, replacement charges, \$584.15; garage charges, \$493.15; and driver's wages, \$750, or a total of \$2,297.80. This gives a daily cost of \$7.659, a wagon-mile of .2246 and a ton-mile cost of the same amount.

The real economy of operation, as far as ton-mile totals are concerned, is shown distinctly by the cost figures of the 3 1-2-ton trucks. These big cars are run slower than the vehicles of smaller size and the daily service delivered averages about 27.7 miles, or 8,310 miles a year.

On this basis the ton mileage would amount to 29,085, and as the total cost of operation, including writing off the investment and complete maintenance, is \$3,101.60 a year, the ton-mile cost is reduced to .1065. The item for tires amounts to \$443.80 a year and the other expenses are proportionately heavier than those noted with respect to the smaller cars.

The delivery service of this company is very extensive, as noted before, and there are six or seven hauls averaging close to 40 miles a day that are now accomplished by relays of horse-drawn equipment. While the mileage required is somewhat in excess of the average amount demanded of electric cars, the service is performed in part by such machines. It is openly stated that gasoline automobiles of modern make and model and of large carrying capacity could be used in such service. The seventeen General Vehicles composing the battery of this company constitute a very small percentage of the delivery equipment.

Another big store that utilizes electric cars in addition to its gasoline automobile equipment is W. & J. Sloane. This concern has four 3 1-2-ton General Vehicles in its service. The cars are

used for heavy transfer work between the depots of the store and in transporting freight to and from the railroad and steamship terminals.

This type of wagon is one of the standard sizes manufactured by the General Vehicle Company and the following table of figures represents the experience of numerous users under widely varying conditions. It should be kept in mind that a considerably higher mileage is possible and that where such mileage is delivered under normal circumstances the wagon and ton-mile cost of operation may be materially lessened. The estimate is based upon 8,310 miles a year.

Fixed charges .....	\$660.00
Replacements .....	1,026.45
Garage charges .....	665.15
Driver .....	750.00

Total..... \$3,101.60

Under the head of replacements are included battery renewals, which are figured at \$357; tires, \$443.80, and other renewals, parts and supplies amount to \$225.65. Owing to the fact that starting and stopping are not so tremendously destructive on tires where low maximum speed is possible, the tire mileage is found to exceed the standard guarantee in nearly every case.

The total cost of operation of such a truck may be placed at about \$62 a week, year in and year out.

Stern Brothers use two 2-ton electrics which deliver each an average of over 31 miles a day, or nearly 9,400 miles a year. This type of car costs a total of \$2,655.85 per annum and the complete ton-mile cost is .1413.

#### Efficiency Increases with Size

In considering the subject of rates of charge in the various items of cost with relation to the size of truck used, a number of interesting examples are furnished by the figures of users. The item of fixed charges increases only slightly as the size of the truck considered becomes larger. The fact that 10 per cent. amortization charge for sinking fund must increase with the list price of the truck, and that interest is greater for the big truck than for the small, would seem to insure a large proportional increase in the fixed charges for a big truck. This, however, is not nearly so apparent in practice. For instance, the total fixed charges for a 1,000-pound wagon is figured at \$408 and for one of 3 1-2 tons capacity it is only \$660.

In the wages of the driver, the average figures are the same for any style of truck. The same may be said for the pay of garage employees. Rentals, however, in the garage space are much higher for the big car than for the little truck.

But the marked differences are to be found in the maintenance items and the current costs. For instance, the 1,000-pound car costs for renewals \$456.45 a year, and for current \$122.35.

With the 1-ton truck the maintenance is \$584.15 and current \$152.10. The 2-ton type costs for maintenance \$742.90, and for current \$218.80. The 3 1-2-ton size costs \$1,026.45 for maintenance and \$285.45 for current.

#### Corrosion of Connections

Ignition trouble is often due to corroded battery terminals. The connections may have the proper appearance, but at the same time the battery will not appear to be giving the proper power and the resulting current will be weak. The green appearance of the wire at the point of connection should be a sufficient clue to the driver as to the cause of the faulty ignition. In case this is found to be the trouble, the wire should be removed from the terminals and they should be scraped until they are bright before being reconnected. The batteries should be kept in a place where they are not likely to be reached by water for if moisture gets in the corrosion will prove very annoying.

#### Glass for Street Pavement

The idea of using glass for paving city and village streets is not entirely novel, but, from time to time, turns up again, though, as the following instance shows, the possibilities of this material for the purpose named do not seem to be very great. A plant was established 7 or 8 years ago at La Demi Lune, a suburb about 4 miles from Lyon, France, for making glass paving material under the name of *pierre de verre Garchey*. The place chosen for laying the glass pavement was a section where traffic of cabs, automobiles, and wagons of all kinds is very heavy. The glass bricks remained in place for less than 2 years, and were then taken out, practically destroyed.



# Automobile Tops: Care and Preservation

Avoid Dressings and Renovators; Brushing and Dry Cleaning Are Sufficient for the Mohair Variety, Soap and Water for Those of Leather or Pantasote

By M. C. HILICK

THE automobile top is probably one of the worst abused parts of the car. All manner of attention is given to the car's motive power, to the body and chassis finish, and to those details which round out and complete the equipment in general; but the top, when removed, is "shunted" into almost any handy out-of-the-way place, there to remain until again needed, at which time it gets a shaking up by way of limbering joints and taking out wrinkles and then goes to its place on the car looking every inch the neglected part it really is.

Concededly this sort of treatment is all wrong. The top plays an important part in the economy of the car. To give the good and sufficient protection for which it is designed it should, first of all, be of good quality, whether leather, rubber, mohair, Pantasote or some other fabric. The cheap automobile top is, as a rule, about the poorest paying investment the car owner can indulge in. The car top offers the promoter of shoddy a brilliant opportunity to exercise his seemingly inexhaustible resources, and as a result we have a great multitude of tops in use, many of which are of an inferior quality. The need of the very best possible attention being devoted to such equipment is therefore apparent. With such attention given it even the poor top will make a brave show of looking presentable.

## Soap and Water for Cleaning

The average car owner labors under the impression that the car top should be regularly doped at frequent intervals with some sort of material calculated to be of use in preserving the finish and enhancing its appearance generally, which impression is, for the most part, entirely at fault.

The least dressing, renovator, restoring medium—call it what you will—applied to the top, the better. Even the rubber top, which in the horse-drawn carriage trade is credited as requiring very early in its days of service some sort of dressing to protect and preserve the enamel, is better off, so long as the enamel holds good, without any coating of preserving material.

In the application of a dressing or renovator the practice should consist of first cleaning the top thoroughly which may best be done by beating a little castile soap into a bucket of tepid water until a good suds is obtained. Then wet up a soft-wool sponge in this soap solution and wash the top, using water plentifully enough to easily start the dirt. Go over the top next with clean, soft water to catch up the traces of alkali, finishing off with a wash leather to dry off the fabric. Now apply sparingly any selected dressing of a reliable quality.

Many owners of hand-buffed leather tops discreetly object to having any dressing or renovator applied to the leather except in case of the enamel showing a bad state of wear. Often by going over the leather with a tuft of clean, fine waste moistened with kerosene oil, and polishing dry with dry cloth or waste, the enamel will take on a fresh, new appearance, with enough luster to fairly pass it along as a new top. If the wear is sufficient to forbid this kind of renovating then take a pint of elastic finishing varnish and 1-2 ounce of beeswax, and thin out with pure turpentine to a thin brushing consistency, adding, meantime, a bit of drop black to get the right blend of color. Rub this onto the leather with a soft woolen cloth, working it out so that no surplus material remains.

The machine-buffed leather will probably need something more substantial when the enamel becomes slashed and beaten up with wear, and for this purpose a dressing made up of one-third liquid asphaltum and two-thirds castor oil, with a half ounce of ivory black added to a pint of the mixture, will afford requisite protection and impart an unsurpassed softness and pliability to the leather. For the worn and declining rubber top this dressing will likewise be found especially adapted, although a dressing that has been largely used is prepared as follows: Elastic finishing varnish and liquid asphaltum, 1-4 gallon each; boiled linseed oil and coach japan, 1-8 gallon each; turpentine 1-4 gallon; ivory black, 3-4 pound.

## Vigorous Brushing Effective

Any and all of the above mixtures should be applied in a very thin coating after the top has been washed and cleaned as above described.

Under no circumstances should a dressing or renovator be used that will not preserve the enamel, strengthen the wearing properties of the leather or rubber, and restore and maintain the natural flexibility of the fabric.

Perhaps the mohair top is giving the car owner the greatest problem in care-taking, due probably to a wrong understanding of what such tops really need. As there is a rubber interlining between all double texture mohair fabrics the only safe and sure cleaning material to be applied to the mohair is a solution of castile soap and water. Ordinarily a genuine mohair top may be kept in good condition by a frequent vigorous brushing with a stiff broom.

What has been said concerning the application of preservative mediums to leather and rubber tops, and to their upkeep, may be repeated in connection with the Pantasote top. Keep the finish clean by brushing and dry wiping and in the case of the weather-exposed surface becoming parched and dry give it a renewing treatment by finishing off with some reliable transparent liquid dressing which in addition to freshening up and giving a new look to the fabric dries off in a way not to leave any greasy or adhesive substance.

**Self-propelled Wireless Station**—In Austria the railway and telegraph regiment of the army has been equipped with a new vehicle for the transmission of wireless messages. The motor of the car drives the high-frequency alternating-current dynamo, which is located under the driver's seat, as well as the independent-exciter direct-current dynamo, and by means of an automatic regulator it has been rendered possible, not only to neutralize the irregularities in the gasoline motor drive and thereby equalizing the speed of the dynamos, but also to regulate this speed so as to make it correspond with the different lengths of the wireless wave, as required in each instance. Behind the driver's seat the switch tables and the instruments for sending and receiving are placed. The antenna is carried on a 30-meter high collapsible mast, which is carried on the roof of the vehicle during travel and may be erected in about one-half hour. The interior of the wagon seats five men and is arranged to be closed up with sound-proof curtains.—From *Allgemeine Automobil-Zeitung*, February 16.

# Digest of the Leading Foreign Journals

## Short Description of the Panhard Six-Cylinder Four-Wheel-Drive Truck and Tractor—Castor Oil as a Lubricant for Motors—The Braking Problem—A New Belgian Carbureter

**PANHARD Four-Wheel-Drive Truck and Tractor.**—The characteristics of a radical departure in truck and tractor construction brought out by the Panhard et Levassor firm are comprised in a system for driving and steering all four wheels with the use of only one differential gear and with provisions for making the rear wheels track exactly with the front ones, while also making all four wheels perform their proportionate share of the traction work at all turns of the vehicle. In addition, the differential may be blocked, so as to obviate the dissipation of power and the frustration of traction which may occur on slippery ground if the differential permits the wheel or wheels on one side of the vehicle to be spun around idly in the mire, absorbing all the power in the resistance overcome. This vehicle is built with a view to meeting certain specifications of the French army, whose purpose it is to avoid excessive concentrated weights, which might strain bridges and stall the vehicles themselves on soft roads. The weight limits are 5,600 kilograms for the whole tractor-truck and 5,000 kilograms maximum over each axle, and this is to be coupled with ability to pull a trailer load of at least three-sevenths of the tractor's weight.

The six-cylinder motor of 30-45 horsepower drives through a four-speed gear box from which the power reaches the wheels without the intermediation of any universal joints. To this end the gear shaft first drives, by bevel gears, a transverse jackshaft with differential, and the right hand end of the jackshaft drives the two right hand wheels, while the left end similarly drives the left side wheels. The mechanism by which this is accomplished comprises, for each wheel, a longitudinal bevel-gear drive shaft which attacks the inner end of a short horizontal shaft which is mounted on top of the axle and which in turn engages the upper bevel pinion of a short auxiliary vertical shaft which coincides with the steering pivot of the wheel—revolving inside of it—and which finally drives the large bevel-gear crown secured upon the wheel by engaging it with its lower pinion.

As will be noticed from Fig. 3, in the part showing a vertical section through a rear wheel, this wheel, which is fitted with twin tires, revolves upon a cambered axle, thereby bringing the two tires in equal contact and traction relations to a crowned road surface and securing equal wear on them. It is also noticed that the interior space of the broad wheel is utilized for an advantageous disposition of the brake drum and shoes. The wheel disk is pressed steel.

The longitudinal shafts which transmit power from the differential shaft to the wheel systems are encased in tubes which are bolted to the axles and journaled at their other ends upon a tube concentrically surrounding the differential shaft but secured to the chassis by means of a housing, as shown most plainly in Fig. 2, and the driving impulse is thus imparted rigidly from the axles to the chassis, leaving the spring suspension free play and allowing the longitudinal drive shafts to oscillate with the vehicle movements without any other effect on the driving system than a slight angular play in the mesh of the bevel gears at the ends of the differential shaft. The steering action takes effect upon a longitudinal shaft, and from the latter is transmitted to two worm and sector gears, one for each axle, and actuating the wheels by tie rods in the usual manner, but with such provision, the tie rod being in front of the rear axle but behind the front axle, that exact tracking is secured. The brake system includes a motor brake operated by pedal I, Fig. 1, a differential brake operated from pedal J, and drum brakes in all of the four wheels operated by pedal K over pulleys CC. A winch is operated through a special worm gear in the change-gear box and is calculated to draw a cable at a speed of 2 kilometers per hour and with a traction effort of nearly 3800 kilograms.

The whole construction is designed with extraordinary and military rather than ordinary commercial conditions in mind. It is said to afford an efficiency, as between the motor and the wheel rims, of about 60 per cent., but this of course does not

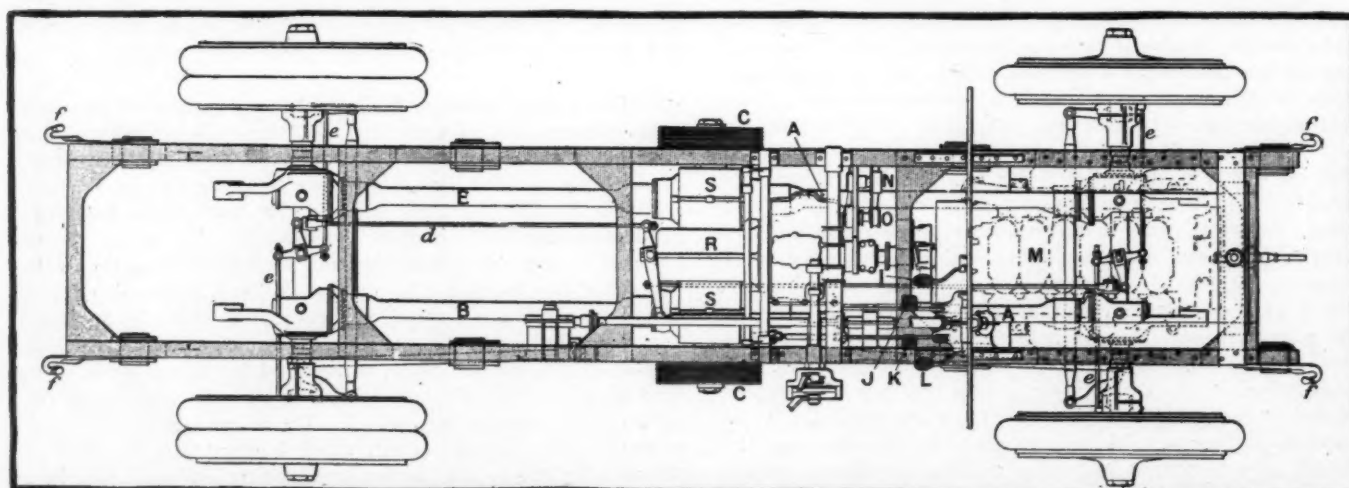


Fig. 1—Plan view of Panhard et Levassor tractor-truck chassis with four-wheel driving and steering—AA, front-wheel drive shafts—BB, rear-wheel drive shafts—M, six-cylinder motor—R, differential—SS, incased bevel-gears at ends of jackshaft—N and O, shaft and clutch for control of winch—d, E, wheel-brake rods—f, f, f, f, trailer hooks



necessarily mean that it will be equally efficient when the mechanism has been subjected to much wear, although it may be assumed that the best engineering knowledge has been applied in dimensioning the many parts in proportion to the wear to which they will severally be subjected. The weight of the construction is 4,000 kilograms, the payload 2,000, and the distribution is 2,470 kilograms on the front axle and 3,530 on the rear axle. The vehicle can turn in a circle of 9 meters in diameter.—From description by Col. Renaud, the well-known inventor of the Renaud road train, in *Omnia-Locomotion*, February 17.

**Castor Oil for Motors.**—It has been supposed that because castor oil is used, and has been in use for a long time, for high pressure superheat marine engines and turbines, and because it is used exclusively for such rotary gasoline motors as the Gnome and by preference for the motors of racing cars, that it is in itself a better lubricant for gasoline motors in general than the mineral oils more commonly employed. Exception may be taken to this supposition. Cold-drawn castor oil, which is the prime quality and the only one to be considered for motors, is almost as heavy as water, weighing 963 grams per liter; it is very viscous and its lubricating properties withstand very high temperatures. It is almost white, clear and of a general appearance suggesting great fluidity, but in reality it is, as said, highly viscous, and the difficulties which this property causes in a cold motor constitute the chief drawback to its general employment.

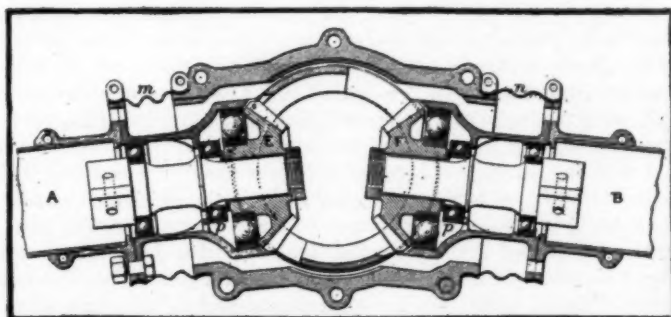


Fig. 2—System for obtaining rigid push and pull through the housings of drive shafts A and B; m and n, flexible leather dust casing. For details see text

It clogs conduits, piston rings and bearings, rendering a start difficult. It is at its best in carefully groomed motors working at high temperatures, such as air-cooled motors with high compression. The charge that it causes deposits in the cylinders and attacks the metal holds good only for the lower, hot-drawn grades. A point is made of the fact that castor oil is less readily solvable in gasoline than the mineral oils. It is possible that this property may affect flame propagation and power development favorably. In brief, unless the motor in an ordinary automobile proves itself inclined to overheating, the disadvantages of castor oil for its lubrication overbalance its advantages—apart from the consideration of its higher price.—From *La Vie Automobile*, November 25.

**The Brake Question.**—When the brake blocks the wheel it is the rubber of the tire which is used as a brake surface, and this is not an economical practice. Brake material costing 1 cent will absorb as many millions of footpounds as tire material costing \$50. Besides, as the brake pressure can exceed the weight supported on a tire and as the coefficient of friction between the tire and the ground is smaller than the coefficient of friction between the brake shoe and drum need to be, a car can be stopped shorter by means of the latter. If the diameter of the tire is three times that of the brake surfaces, three times more momentum can be absorbed in the brake than in the tire without stopping the rotation of the wheel. A broad brake of small diameter is therefore safer and more economical in operation

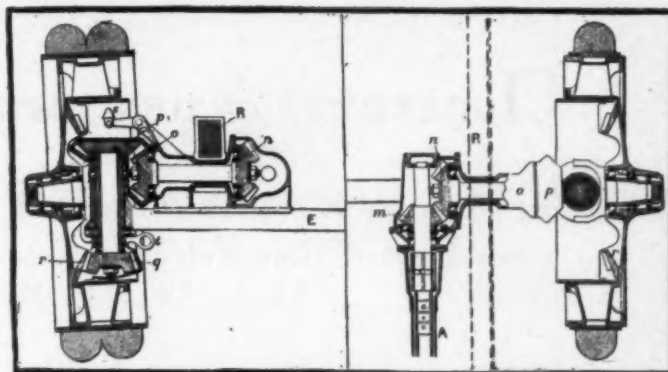


Fig. 3—(1) Vertical section of rear wheel with driving and steering mechanism; s, brake attachment; t, steering attachment—(2) Horizontal section of front wheel and adjacent driving connections. For details see text

than a narrow one of larger diameter.—From various foreign articles advocating front wheel brakes.

**Automatic Belgian Carbureter.**—The Gobbi carbureter was exhibited at the recent automobile show at Brussels. Its construction is shown in Fig. 4. Its automatic qualities depend upon a new method for making the air regulate the gasoline feed. The jet tube A has small perforations, as at a, leading the gasoline into a surrounding tube B, which is of a conical conformation widening toward the top, and is so covered with the cap C that the suction from the intake pipe applies less directly to the gasoline in it than to that standing in the jet proper. The throttle is a butterfly valve F, and there are no other movable pieces. The tube B affords a gasoline reserve which tends to stand at the level of the gasoline in the float chamber, by virtue of its dimensions and relative protection from the suction of the engine, and from which, particularly, gasoline is readily fed into the jet even when the suction would not otherwise be sufficient to overcome the inertia of the float D with the promptness necessary for having the car respond quickly to acceleration. When the suction is strong—the engine working at high speed—and the fuel is supplied readily from the float chamber for both the inner and the outer tube, the latter acts as a second jet. In the illustration E represents a cotter pin for securing the carbureter to the intake pipe.—Illustration from *Omnia-Locomotion*, February 10.

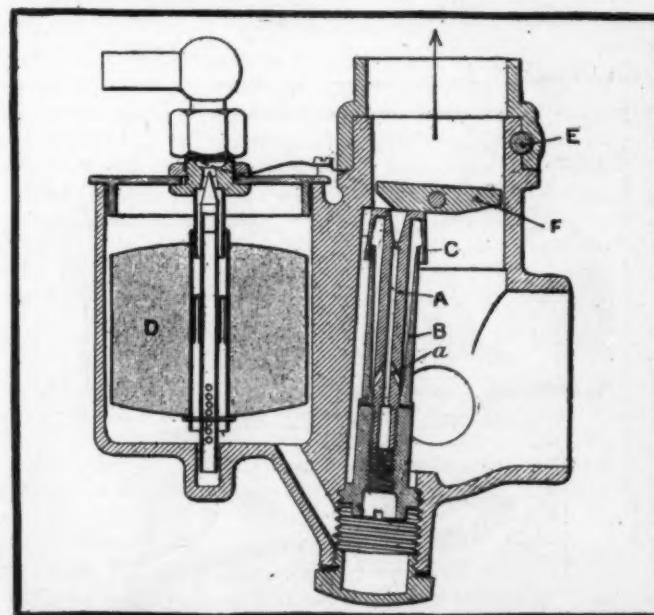


Fig. 4—Section of the Gobbi carbureter with new style of jet

## Letters Answered and Discussed

### Watching Manifold Leaks; Another Radiator Trouble Discovered; Punctured Radiator Repair; Best Valve Timing; Axle Information; Aligning Drive Shaft; World's Petroleum Production

#### Watching for Manifold Leaks

EDITOR THE AUTOMOBILE:

[3,064]—In a recent issue you mentioned a method of curing manifold leaks, and I was very much interested. In connection with this I have often wondered at which points the manifolds were weak. Where are the points that gas or water will most readily escape?

B. T. TUCKER.

Closter, N. J.

These points are best shown by means of an illustration. In Fig. 1 the cylinders are denoted and the joints which often leak are there shown. In other words, the points which are most apt to leak are naturally at all the joints in the piping or at other points of connection.

#### Water Syphons from Radiator

EDITOR THE AUTOMOBILE:

[3,065]—It may seem an exaggerated statement to many when it is said that but few drivers of cars know how to put water in their radiators—they are too apt to think it necessary to pour in water until it reaches the top of the overflow pipe. This is entirely wrong. Many cases of overheating attributed to other causes are indirectly caused by putting in too much water.

Everyone knows that as water is heated it expands, and it does not take a great deal of common sense to see that the same thing happens in the motor. As this expansion takes place the water naturally rises in the radiator, with the result that it forces out all air through the overflow pipe and thence starts a syphon. When this takes place the water goes very quickly. It does not take long for the remaining water to get very hot.

I have found it advisable to keep the water level just below the top of the radiator proper, or possibly a little lower.

In many cases where the owner of a car has been unable to locate the cause of overheating this suggestion has remedied the trouble.

N. EARLE TAYLOR.

East Orange, N. J.

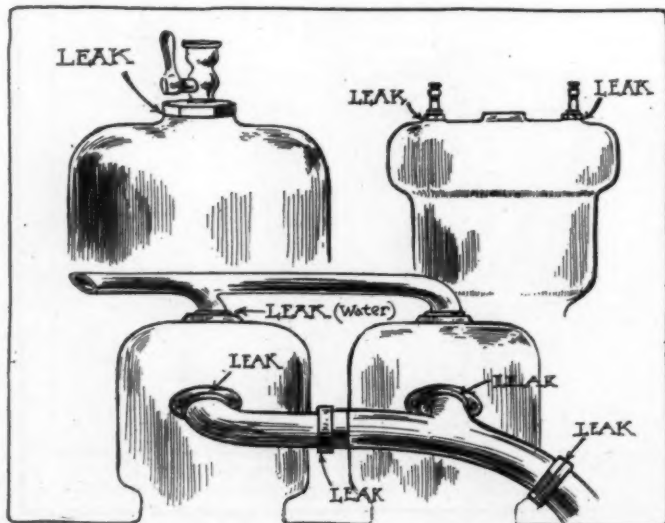


Fig. 1—Where the leaks are often found

#### Trouble with Leaky Radiator

EDITOR THE AUTOMOBILE:

[3,066]—Under the head of "Letters Answered and Discussed" in THE AUTOMOBILE, March 7, you ask if any readers have tried anything for a punctured radiator. I wish to give you an experience which may be of some value to your readers.

I was taking a short trip with my car last fall and the arm that holds the fan broke while I was on the road. The fan cut one of the radiator tubes at about the middle of its length. At first I thought that I would have to leave the car with a farmer, but after looking over the cut in the radiator it occurred to me that I had a rawhide lacer, a string which was about 1-2 inch wide and which was very soft and pliable. I carefully wound this around the tube of the radiator, being careful to place it round the cut, and then tied it. I got some water from a nearby brook, filled my radiator and, to my pleasure, found that the cut did not leak at all. I completed my trip with the radiator in this condition, and afterwards ran the car several miles without any waste of water.

I want to give you a suggestion for the care of rims of automobile wheels. When I put my car away in the fall I remove the tires and use some fine sandpaper to clean off the rust and dirt from the rim of the wheels and the rings that hold the tires. After cleaning them thoroughly I give them a coat of aluminum paint. This I have tried for three years, and it has given perfect satisfaction.

W. D. WELCH.

Gloversville, N. Y.

#### What Is Best Valve Timing

EDITOR THE AUTOMOBILE:

[3,067]—What will be the best valve timing for a six-cylinder motor of the L-head type? The bore is 3 7/8 inches and the stroke is 4 1/2 inches. The valves are 1 1/2 inches and the lift 3/8 inch. The revolutions per minute are 800.

Revere, Mass.

B. C. TAYLOR.

A good firing order would be 1-4-2-6-3-5. This is good practice. The valve timing should be according to the diagram published on former occasions in these columns in which the inlet valve opens 10 degrees past dead center and closes 30 degrees past lower dead center measuring around the crank circle. Exhaust valve opens 40 degrees before lower dead center and closes 5 degrees past upper dead center.

#### Easy-Starting Carbureters

EDITOR THE AUTOMOBILE:

[3,068]—I am informed that many of the new carbureters upon the market are fitted with a device for easy starting. Would you please tell me, through the columns of THE AUTOMOBILE, what the device consists of?

(2) At what voltage does the ignition system of an automobile generally work best? Does it do any harm to have the voltage in excess of that actually required to operate the system successfully?

Bronxville, N. Y.

NEW OWNER.

The device to which you refer consists of a sort of throttle which shuts off the air supply of the carbureter when starting.



The suction of the pistons will therefore fall upon the spray nozzle through which the gasoline passes instead of upon the air passage and in this way a larger amount of gasoline in proportion to the air is drawn into the carburetor, giving a richer mixture. This is exactly what is required for starting and, as a result, it is often easier to start a motor which has been standing for some time.

(2) The ignition system generally operates at 6 volts and is designed for a current of that strength in the primary circuit. The only damage that would be likely to result from using a higher voltage would be the fusing of the contact points. This would make itself felt at the trembler of the coil and would be very apt to prove troublesome in that it would necessitate a frequent readjustment in order to overcome the widening of the gap between the points owing to the fact that they had been burned away.

### Wants Information on Axles

Editor THE AUTOMOBILE:

[3,069]—As I am a subscriber, I take the liberty of asking you to explain, in an early issue, the following:

- (1) What is a semi-floating rear axle?
- (2) What is a floating rear axle?
- (3) Which is the better?
- (4) Which are better, roller bearings or ball bearings for the complete car? I trust you will answer these questions in the near future.

S. A. M.

Maple Rapids, Mich.

(1) The semi-floating axle is a form of live axle in which the drive shafts are supported only by bearings at the points where they are connected to the main gears of the differential. The other ends of the drive shafts pass into the wheels. The weight of the car is removed from the drive shaft owing to the fact that the wheel runs upon a bearing supported by the tube which incloses the driving members.

(2) The floating type of rear axle has no strain whatever upon the drive shafts, while the semi-floating is subjected to the side stresses. The drive shafts of the floating type of rear axle may be extracted by simply removing the hub caps of the wheels, as they are merely short shafts held in place at the inner ends by fitting into a squared aperture in the differential gear, while the outer end is flexibly connected to the rear wheel hub.

(3) Each type has its advantages. When well made they are both strong enough for their work and reliable. The floating type, however, has the advantage of greater accessibility and ease of repair.

(4) It would be impossible to say that one type of bearing is better than another. Both have their advocates.

### Aligning the Ford Drive Shaft

Editor THE AUTOMOBILE:

[3,070]—Being an attentive reader of THE AUTOMOBILE, I would be pleased to have you answer the following questions:

(1) I have a second-hand Ford, model T car, which has the rear wheels keyed to the shaft horizontally and a key vertically through the end of the shaft and the hubs. The wheels are loose on the shaft after the keys are driven up tight and as there is no room for a shim, how shall I tighten the wheels on the shaft?

(2) What is the timing rule of the Ford as regards opening and closing of the valves?

(3) How may the drive-shaft be lined up with the rear axle so that the bevel gears mesh correctly?

SUBSCRIBER.

Grove City, Minn.

(1) Where the shaft and the inside of the hub have become worn it is next to impossible to fasten the wheel on right except by having the keyways milled out and new keys made to fit.

It would be more advisable that, instead of doing this, you put in the new tapered axles which will include the master gears in the differential and the tapered hubs, thus doing away with the pins in the end of the axles.

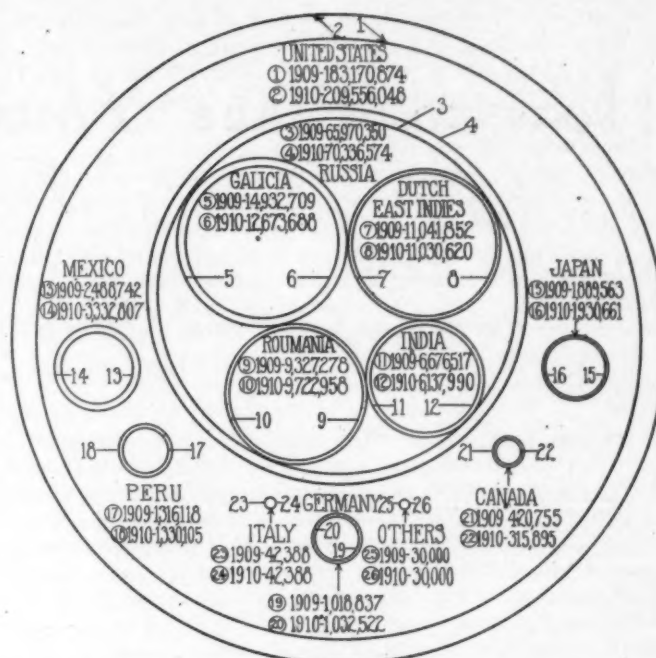


Fig. 2—Diagram showing relative production of petroleum

(2) In regard to the timing of the valves, inlet valve opens at about dead center and stays open the full length of the stroke and about one-quarter of an inch on the upward stroke. The exhaust valve opens about three-eighths of an inch before the bottom of working stroke and stays open till dead center on the upward stroke. The motor explodes in the order 1-2-4-3.

(3) In lining up the driving pinion, assemble the differential and shaft in one side of the housing, then bolt the drive-shaft and housing with the drive-shaft to this one-half of rear axle housing. In this way you can readily see just how the driving pinion meshes in the large gear and if necessary put a small shim under the roller bearing housing on drive-shaft.

### World's Petroleum Production

Editor THE AUTOMOBILE:

[3,071]—Could you tell me what was the production of crude oil in the United States during the last couple of years? Also, how it compares with the petroleum output of other countries and to their rate of production increase.

JOHN G. TOOTH.

Philadelphia, Pa.

The accompanying illustration, Fig. 2, gives at a glance a comparison of the crude-oil output of various countries during the years 1909 and 1910. The production of each country for these years is represented by the areas of respective circles, each of which is numbered. With the exception of four countries, Galicia, Dutch East Indies, British India and Canada, all important oil-producing countries have increased their output. The figures given in the illustration stand for barrels of 42 gallons capacity. The total increase of petroleum production from 1909 to 1910 is 29,146,183 barrels, or 1,224,139,686 gallons.

### Dual Wheels for Pleasure Cars

Editor THE AUTOMOBILE:

[3,072]—In the article on dual wheels in THE AUTOMOBILE of March 7 I note the points in their favor and agree with you. Why cannot this be done on any car by lengthening the axle and putting on the extra wheel?

F. H. HOBBS.

New York City.

Up to a limit of about 2,500 pounds it is better economy to use the single pneumatic as it is fully capable of carrying the load without rapid wear, especially if the car be overtired. The dual tire above this point can be used to advantage. It is simply a matter of securing sufficient strength to sustain the weight.

# How to Place Your Car in Commission

## Part II

### Private Owners' Preparations for the Coming Season; Examining Electric Terminals; Preventing Corrosion; Overhauling Coil; Adjusting the Carbureter; Inspecting Gasoline Line

**I**T is now time to examine the electric terminals. In the previous installment of this article the different steps in the overhauling process were traced through the various stages up to this point. The motor has now been put in condition, the oil renewed, carbon removed, valves ground and timed, tappets adjusted and the distance between the sparking points in the spark-plug tested. The electric circuit comes next.

Terminals are very apt to corrode. The products of corrosion are non-conductive and hence seriously interfere with the circuit. In fact, when the corrosion becomes so bad that it gets between the wire and the binding-post it will break the current

carefully along its length and note if the insulation is worn where the wires have been chafing against the edge of a piece of metal. See if the wires have been allowed to lie against the exhaust manifold or any other hot parts of the motor and become burnt. If this is the case they should be secured against any further damage of this kind by making a little T-joint as shown at B, Fig. 1, or any other device of such material as leather or metal piping. Any defective spots which are found may be bound with insulation tape or a rubber tube just a little larger than the wire may be fitted so that there will be no further chance for a short circuit.

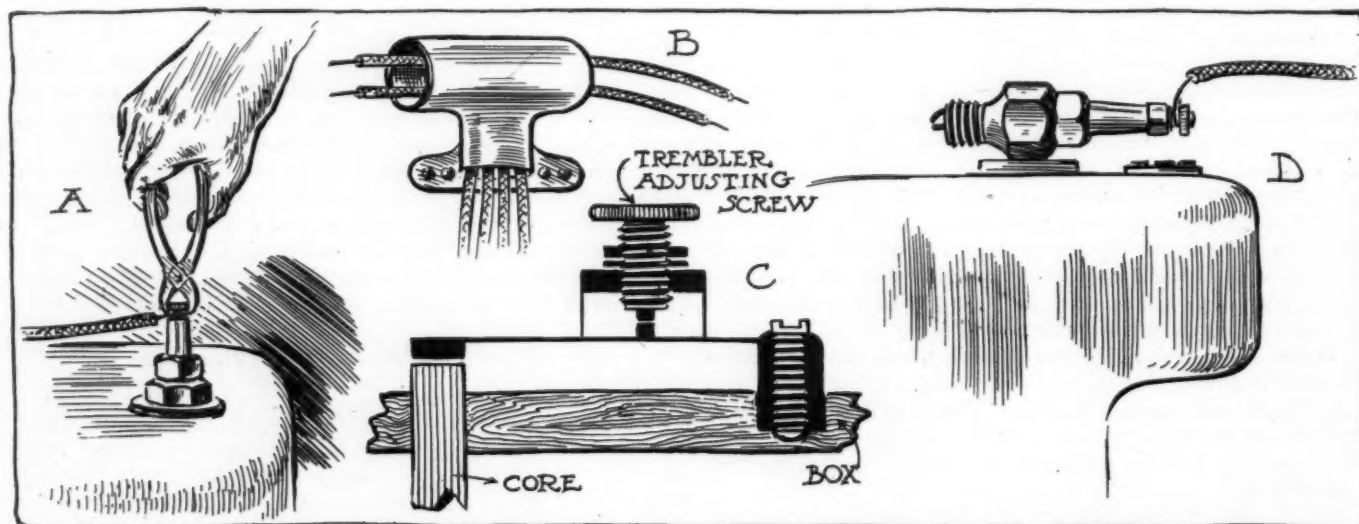


Fig. 2—Points to watch and adjust. Ground wire battery box, auxiliary air and needle valve

altogether. Look at each binding-post carefully through the system. Remove the wires from each and the knurled nuts which hold them in place. Wipe the ends of the wires with gasoline and then treat the binding-posts and the knurled nuts in the same way. A small piece of fine emery is then torn off the sheet which should always be at hand and the wires and metal of the binding-posts rendered bright and clean. If the terminals are badly corroded they can be often cleaned by the use of ammonia. When they are thoroughly clean an application of vaseline or any other similar grease will form a very good protector and will go far toward protecting the wires and preventing the recurrence of the corrosion.

#### Testing the Spark-Plugs

**A**fter the terminals have been put in good condition the spark-plugs should be removed from the cylinder and with the wires connected to them they should be laid upon the cylinders, D, Fig. 1. The starting crank should then be slowly turned over and the sparks noted at the spark-plugs. If they are all good the plugs may be returned to the cylinders; if not, the wires should be examined. Take each length of wire and go

If the car has been allowed to stand where the water has soaked into the insulation of the wires a high-tension current leak will be sure to result. In order to remedy this, dry out the wires in an oven or by allowing the sun to shine on them. After they are perfectly dry coat them all with paraffin. Put a lump of paraffin in a pot and melt it. It is then applied with a brush. Special pains should be taken with the wire that runs from the coil or high-tension magneto to the spark-plug as this is of high voltage and has the power of traversing gaps and poor conductors that would be impossible for the lower tension currents. It would be a good plan while overhauling the car to put these wires in tubes. Red fiber tubing is excellent for this purpose.

The renewal of the dry batteries will depend upon their strength. The correct voltage attained by the set should be about 6. A small voltmeter may be used to test for this and if the batteries show weakness they should be renewed. The battery box should be cleaned out.

The switch on the dash should be tested. Turn it to the off position and then crank the motor. If a spark is secured, it is evident that the switch is not effective in interrupting the cur-



rent and that the connections are probably bad so that a loose end of wire allows the current to pass on through the switch. If the motor will not run with the switch in position make a temporary connection outside the switch box and then start the motor. If it runs well it is evident that there is some fault in the switch and it will have to be taken apart and examined.

One reason why the car will run well before the owner starts to overhaul it and then, when he attempts to try it out, will not run well is the ground wire attachment. The ground wire is sometimes put on the car in the manner shown at A, Fig. 2. When the mud pan is detached the clip which holds both the pan and the ground wire is loosened. In this way a poor connection is made at this point. The ground wire should be inspected, cleaned and scraped in the same manner as the other electric connections.

### Improving Ground Connection

The batteries and ground wire being put in good condition the next step is naturally to examine the coil. Here the amateur is apt to get into deep water. Much damage is done to coils where the gaps between the sparking-points of one of the spark-plugs are too large and the motor has been allowed to run with this cylinder missing. The resistance opposed to the current will be too great at the wide gap and as a result the current, seeking the path of least resistance, will jump across the insulation in the windings of the coil. Once the insulation of the windings is broken down, it is a case of sending the coil back to the maker. The coil trembler often needs adjustment.

should be sent back at once to the manufacturer to be repaired.

The directions which have been given as to the coil apply, in a way, to the magneto. The amateur should not attempt to take it apart, but should confine himself to such operations as cleaning, oiling and making the necessary minor adjustments. The motor should be started on the batteries and then switched over to the magneto. If it will not run on the magneto and the wires and spark-plugs are found to be in good condition the operator should examine and clean the contact-breaker. The distributor plate may have an accumulation of gummed oil or dirt which will seriously interfere with the operation of the magneto. This should be cleaned off if it is found. Loose connections or a short circuit in the cables are, of course, troubles which are likely to occur, but which may be readily found if they do. When the carbon brushes are worn and broken on the springs weak trouble will also result.

Timidity need not be felt over the shocks which may be encountered while testing the magneto. In fact they form a handy method of locating some of the difficulties. The carbon brush is held against the metal segments of the distributor by means of a spring. When the surface of the carbon brush is broken, worn to a smooth glaze or, owing to the weakness of the spring, not pushed against the distributor as hard as it might be, a shock will be felt if the hand is placed against the spindle and the motor cranked slowly. If the shock is felt the carbon should be replaced if broken or worn, scraped with fine emery if glassy in appearance, the spring renewed or stretched if weak. If no shock is felt it is evidence that no current is

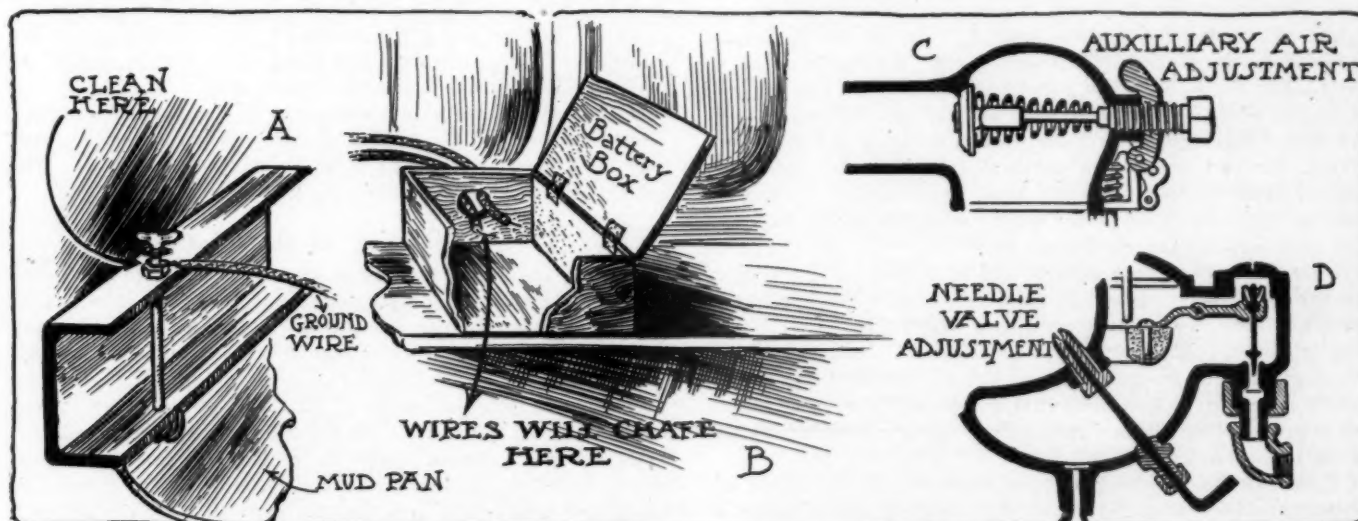


Fig. 2—Points to watch and adjust. Ground wire battery box, auxiliary air and needle valve

The best way to do this is when the motor is running. The little knurled screw shown at C, Fig. 1, is turned until the best results are obtained. The expert can tell this by sound when the motor is not running. A high, buzzing sound, very similar to that made by a flying bee, is about right. A higher or a lower note betokens too tight or too loose an adjustment. The safest way for the amateur to get at the adjustment is to screw the contact screw down until it just makes contact with the trembler. Start the motor and then turn the screw slowly until the most satisfactory firing is given, as shown by the sounds of the explosions. Buzzing within the coil indicates that the insulation within has been broken down and the coil should be sent to the maker.

The primary winding of the coil should be tested. This is done by the use of a volt-meter, first putting it across the current outside the coil and then using it in circuit with one terminal of the coil and one terminal of the battery so that the circuit has to pass through the coil. The voltages are compared and if there is any marked difference the coil will have to be sent to the maker. It is a safe rule to follow that if, in overhauling the coil, any damages are found in the interior, the coil

reaching the wiper. The trouble is probably the central carbon brush, through which the current flows from the armature to the distributor wiper. The central carbon brush should be examined in the same manner as the other carbon brushes. The surface glaze, if there is any, should be removed and the brush renewed if broken or worn. A short circuit will sometimes occur from a little oil deposit or dust. This may be readily detected by a close examination and removed. After these operations have been completed, try the magneto again and, if it is found that it is still out of order, send it back to the factory, for the trouble will be such that it would never pay the amateur to attempt its repair.

### How to Adjust the Carbureter

Joy comes to the heart of the average car owner when he can tinker with his carbureter. Now is the time to do it; at the beginning of the season. Test it out, adjust it and then let it alone. The first and greatest rule to remember in adjusting the carbureter is that it must be done systematically.

First, drain the carbureter, then start the motor with the spark retarded and the gears in neutral or the clutch disengaged.

Open the throttle and speed up the motor and then close it rapidly with the spark set in different positions, and note the results. If there are backfires, either open the fuel valve or close the air valve according to the judgment as to which would give the better results. If in doubt, try both and see which works the best. It will all depend upon the relative adjustments of the carbureter before the test was started. If the needle valve was open for a distance and the air valve fairly well closed it would, of course, be hard to say which should be changed and both will have to be tried. If, on the other hand, the needle valve was closed and the air valve was adjusted to about the midway position the needle valve would be no doubt the valve to open.

Backfires may not result; the motor may smoke. If this is the case the opposite adjustment would be naturally the one to make. Close the needle valve slightly or open the air valve. Change the positions of the spark rapidly and note the results again. When the motor works satisfactorily at the different spark positions the car is ready to be taken out on the road. The owner may wish to finish his other work of overhauling before doing this and it would, perhaps, be the best thing to do. On the other hand, if the car is taken out now, the carbureter adjustment may be completed and any weak spots which have been overlooked may be noted.

### Carbureter Test on the Road

Take the car to a long hill in some part of the country, where a little extra speed will not draw the attention of the local constabulary or endanger the lives of passing citizens, and note the speed acceleration, or, in common parlance, how the car picks up when the throttle is opened. Change the fuel valve without touching the air adjustment until the motor picks up best along the hill. When the adjustment of the fuel valve is found at which the acceleration is best try this adjustment with various changes in the air valve without touching the fuel valve. When the best results are obtained from this the fuel valve should again be used until the acceleration is best. Then try various adjustments on the air valve. Alternate in this way until the most satisfactory results are obtained.

These instructions are general and will apply to any type of carbureter. Makers generally print instructions for the adjustments of their own carbureters and, if they do not, will be willing to give special directions to the users of their makes. On most of the carbureters in use at the present time the adjustments have been simplified by having high and low speed adjustment points. The above directions are correct, however, on any make of carbureter.

Trouble will occasionally develop when making the spring adjustment. Dirt is the greatest and most frequent cause of trouble which will occur. A little particle will get into the needle valve and stop the flow of gasoline completely, but more often it will merely check it to such an extent that the mixture is very lean at low speeds and all the evils attending such a state are encountered. It will be possible in most cases to get the dirt out by depressing the float of the carbureter and allowing a stream of gasoline to flow through the pipe, thus washing away the deposit. If it is not possible to remove the dirt in this manner it is necessary to remove the needle valve altogether and to pick the dirt out with a wire. A thin brass wire is best to use in this case so that the metal around the seating of the needle valve is not harmed in any way. After the dirt is removed the needle valve is replaced, the former adjustment being secured. This may be noted before the valve is taken out.

### Inspecting the Gasoline Line

The gasoline line should be carefully gone over while the motor is running so that any leaks may be discovered. When they are found in a union it is merely a case of turning up on the screw and increasing the pressure of the gasket. Should the pipe itself be faulty the length should be soldered or renewed. It is better to depend upon a new length of pipe than on a soldered leak and, as the expense is very slight, the renewal

of the pipe is the better way of making the repair. In tightening the joints of the piping care must be used that the gaskets are not squeezed into the line of flow as this will cut off the gasoline to a great extent and give rise to trouble which will be very hard to locate and for which the carbureter is apt to be blamed. Air locks in the line are causes of trouble also, although not very often, as the large vertical bends which are responsible for these locks are now most studiously avoided by the designers of modern cars. When there is no flow it would be better to remove the dirt from the carbureter before looking for air locks, or gaskets squeezed into the gasoline line.

The only remaining trouble which is apt to annoy the man who overhauls his own car is a leaky metal float or a waterlogged cork float. The symptoms accompanying either of these is a mixture which is far too rich owing to the fact that the loss of buoyancy of the float will not allow it to shut off the flow of gasoline at the proper point. If it is a case of a leaky metal float there are two steps to take. The first is to remove the gasoline from the inside and the other is to seal the leak. To remove the gasoline, the float should be placed in an oven kept at a temperature of about 180 degrees Fahr., and the gasoline boiled away. The vapor will expand and the float will be practically emptied after a half hour. Gasoline boils between 140 and 180 degrees Fahr., at atmospheric pressure. The leak can then be soldered and the trouble thus cured.

Cork floats which are waterlogged should be baked. The oven should have a temperature of 180 degrees Fahr. The float is left in the oven for about 3 hours. After this time it will be found to have completely dried out. It should then be removed from the furnace and given a coat of good varnish or shellac. After this is dry a second and third coat may be applied so that the float will not leak again immediately.

Other leaks which give trouble are in the manifold flanges. These are detected by hissing sounds. When suspected, they may be located by covering these points with heavy oil. The bubbles which will appear show the location of the leak.

### Final Testing of the Motor

If the car has been put away in good condition, the motor will now be finished. Before leaving it, however, it would be well to let it run while the operator listens critically for any knocks, pounds or hisses which may develop. Follow the exhaust line down to the muffler while the car is running. It would be well to clean out the muffler. This can be taken apart and scraped. When replacing it put red lead on the pipe threads, or, if the joints are flanged, renew the gaskets. A clogged exhaust means additional back-pressure and hence loss of power. A handy tool with which to scrape the parts that are clogged is a flat file turned over.

Test the compression again. It may be if the car is old and the compression does not hold that the piston rings are worn. In this case, there will be no way out of having them examined and replaced if necessary. Piston rings cost between 20 and 30 cents apiece so that the cost of this repair would be small. In a new car, compression losses may occur owing to the fact that the splits in the piston rings are opposite each other. Other causes of compression loss will have been removed by the overhauling which has been outlined.

While the motor has been running any leaks in the water circulating system will have been detected. If the radiator has a leak in some spot which has not been exactly located it should be removed and corked up at all openings. Air is then forced in with a tire pump while the radiator is lying in a tub of water. The leaks will be located by the bubbles which issue from the radiator. This spot can then be soldered with a piece of strip solder after the metal surrounding the leak has been cleaned and scraped. If no leaks develop the radiator should be flushed out with a pail of boiling water to which a heaping handful of soda has been added. Repeat this several times, allowing the motor to run for a half minute or so with the soda solution in the system. Next flush out with fresh water and then refill.



# The Ideal Automobile for 1913

Some of Our Readers' Conceptions of What Next Year's Car Should Be

## Wants to Crank His Own Car

EDITOR THE AUTOMOBILE:

I herewith send you a description and illustration (or sketch) of my ideal car, which is perhaps identical with that of thousands of other individuals. It should be what the man of moderate income wants without breaking up his home and yet getting a full share of enjoyment out of it.

The car would be a roadster with a capacity of two persons, with an engine giving enough power for driving at an average speed of about 25 miles an hour and occasionally hitting it up to 70 miles. The engine should be water-cooled with a honey-comb radiator, thermo-syphon and fan. A leather-faced cone and three-speed selective gearset, together with a shaft drive, should be used. I believe in a live rear axle and demountable rims, tires to be 34 by 3 1-2 inches.

As to the general equipment, I would like to have acetylene lighting, and, while a self-starter may look good to many others, I prefer cranking my car to starting on the spark and tearing up the cylinders in doing so. I would desire a device for carrying at least one extra tire. The whole design should spell accessibility, so that all persons have a large amount of freedom and comfort.

This car could probably be made and sold for \$2,500, and it would be an important point to have it look, not like a joke, but like a real car. Its appearance should not be cheap, as this is not necessary by any means.

Port Jervis, N. Y.

J. E. SHILLER.

## Wants Engine of Knight Type

EDITOR THE AUTOMOBILE:

I have studied for some time the different forms of ideal cars sent in by your subscribers, but on the whole none of them appeals to me as being the ideal. I will take the liberty of informing you as to my ideal car, which should be as follows:

Firstly, the motor. It should be of the Knight type, with six cylinders having a bore of 5 1-4 inches and a stroke of 7 1-4 inches. This would give plenty of power, with some in reserve at all times. The cylinders should be cast separately, with large

copper water jackets of ample capacity shrunk on them.

For the crankshaft there should be five bearings of generous proportions supported on boxes of bronze, and lined with Parsons white bearing metal.

The cooling should be accomplished by means of thermo-syphon, because it is very simple and has all-around good qualities.

The ignition should be done by two Bosch magnetos geared independent of each other, and with two sets of Bosch spark plugs.

The clutch should be of the multiple-disk type, with 63 disks running in oil. The transmission should have four forward speeds and a reverse, being geared to direct drive on fourth speed. The high-speed gears should have a ratio of 2 to 1.

As to the rear construction, the rear axle should be a floating Timken type, and there should be a Hess-Bright ball thrust bearing next to the differential. The housing should be similar to that on the Stearns and the Alco. The propeller shaft and single universal joint should be inclosed by a torsion tube, which should be designed to act in the place of torsion rods.

There should be four Raymond brakes. Twenty inches by 3 1-2 inches would be good dimensions for these, and they would be very serviceable. The front axle should be of I-beam section, and the front wheels should be equipped with Timken roller bearings.

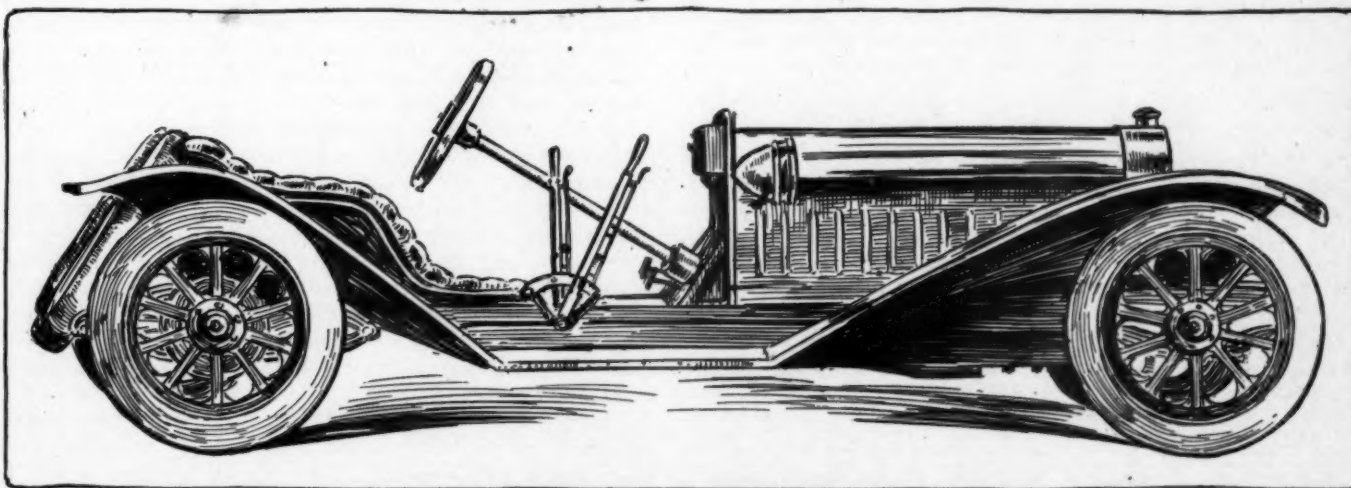
The motor should be self-starting by the compressed air system, and the air tank should be fitted with a hose and valve so as to inflate the tires.

A full torpedo runabout body should be fitted. The seats should be very low and tilted, and they should be upholstered with smooth leather. Also a 45-gallon gasoline tank should be mounted in the rear. There should be fittings for the carrying of two spare tires and rims.

For a lighting system I should prefer a Gray & Davis outfit, complete with dynamo and lights. There should also be a Warner autometer and clock and combination Klaxon horn. The wheels should be of wood, 42 inches in diameter, with Firestone tires. The wheelbase should be 138 inches, and the car should be fitted with Hartford shock-absorbers to insure easy riding.

German Valley, N. J.

RAYMOND NEIGHBOR.



Built for speed and comfort, this is the ideal of J. E. Shiller

# Automobile Metallurgy Made Easy

By E. F. LAKE

## XVIII—Vanadium Steel

### Second Only to Nickel-Chrome Where Strength and Endurance Are Required

THE vanadium steels are so called from the fact that the metal vanadium is added to steel when it is in the molten state for the purpose of producing a stronger and better metal. It is one of the last elements to

be used in steelmaking and has only become prominent since the advent of the automobile. Having been in use such a comparatively short time, there is much difference of opinion as to its effects upon steel, and some investigators even claim that it has no good effects. Its principal use, however, seems to be that of a scavenger, and it is seldom that more than 0.20 per cent. of vanadium is found in the steel. It is, therefore, very different from the nickel and chromium which are used in steels, previously described, and doubtless should be classed with titanium, aluminum and other elements that are used to purify the molten steel.

Vanadium occurs in nature in the form of salts that are analogous to phosphoric acid. The ores that contain these are reduced, and the pure vanadium extracted therefrom is a hard, dense metal with a silvery white color. It has a very high melting temperature and cannot be used in steel until it has been alloyed with pure iron in electrically heated furnaces. This ferro-vanadium will then melt in and thoroughly combine with the molten steel.

Vanadium has a great affinity for oxygen and when either is in the vicinity of the other they are drawn together in a manner similar to that in which a magnet draws a piece of steel and they then form a combination. When this happens in molten steel the combination is lighter than steel and rises to the top, where it can be skimmed off with other foreign substances before the metal is poured into molds. In this way it cleanses the steel of any oxygen that might be present, and as it also has a slight attraction for nitrogen, it aids in removing this element. By removing these two gases they are not liable to be occluded in the steel or form microscopic bubbles and hence the metal is

more dense. By thus scavenging out the impurities, vanadium makes steel stronger, tougher and gives it a greater resistance to torsional or vibrational strains as well as an increased ability to resist wear.

Great care is taken in the manufacture of vanadium steels and it is a disputed question as to whether or not the impurities mentioned above as well as others could be removed by using the same care without vanadium. Some claim that by the use of cheaper alloying materials; the use of two or more slags in refining the steel; by improved processes, such as electric furnaces or by other methods, the impurities can and are being removed and expensive alloying materials like vanadium are not required, as just as good or even better steels are made without them.

Whether the above be so or not, vanadium steels are very well made at the present time and their endurance, strength and wearing qualities place them between the nickel and nickel-chrome steels. The figures presented in the accompanying table would aid in proving this, as they can easily be compared with those given in the tables accompanying the articles on nickel and nickel-chrome steels in preceding issues. The three sets of tests were all made under similar conditions and are the average results that were obtained from many tests. Such figures may be obtained by any skilled workman in a shop with modern equipment.

It is possible to obtain much higher figures than those in the table by very carefully working and heat-treating the specimens. This, however, would not alter their relation to the nickel and nickel-chrome steels, as the same thing could be done with them. In fact, a tensile strength of 350,000 pounds, with an elastic limit of 300,000 pounds, has been obtained with a chrome-nickel steel; while with chrome-vanadium steel a tensile strength of 275,000 pounds and an elastic limit of 250,000 pounds per square inch has been obtained.

STRENGTHS OF VARIOUS VANADIUM STEELS WHEN GIVEN DIFFERENT HEAT-TREATMENTS

Analysis			Annealed				Hardened at 1560° F. and Drawn at 750° F.				Hardened at 1560° F. and Drawn at 925° F.				Hardened at 1560° F. and Drawn at 1300° F.			
Per cent of			Lbs. per Square Inch of		Per cent of		Lbs. per Square Inch of		Per cent of		Lbs. per Square Inch of		Per cent of		Lbs. per Square Inch of		Per cent of	
Carbon	Chromium	Nickel	Tensile Strength	Elastic Limit	Elongation	Contraction	Tensile Strength	Elastic Limit	Elongation	Contraction	Tensile Strength	Elastic Limit	Elongation	Contraction	Tensile Strength	Elastic Limit	Elongation	Contraction
0.10	...	...	51,500	29,600	39	72	60,700	41,300	33	79	69,000	44,800	35	77	62,900	44,800	35	75
0.20	...	...	56,900	27,800	37	62	85,100	58,200	31	67	88,000	59,200	29	66	80,000	55,500	31	69
0.40	...	...	69,000	36,700	32	39	127,200	100,800	18	50	121,400	90,500	21	53	103,800	78,900	26	62
0.55	...	...	78,600	32,300	26	43	149,200	114,200	17	45	136,000	105,300	18	51	112,500	80,600	24	57
0.70	...	...	92,500	38,100	20	28	186,400	147,800	14	41	178,000	129,000	16	39	126,300	91,800	21	50
0.25	0.80	...	88,500	63,200	33	65	181,000	154,400	13	54	149,600	124,100	15	58	115,000	99,200	26	68
0.45	1.00	...	107,400	73,500	26	62	226,100	210,200	11	33	189,800	170,200	14	48	138,200	123,900	23	59
0.30	...	3.5	104,200	70,300	23	56	192,200	171,200	13	51	159,600	142,600	15	55	133,400	106,100	20	58

NOTE: The Vanadium in all of these steels was about 0.20 per cent; silicon below 0.10 per cent; phosphorus and sulphur below 0.02 per cent, and the manganese in the five carbon steels was about 0.30 per cent.



## A Calendar of Events

### Shows

- March 18-23.....Zanesville, O., Annual Show, Wedge Garage.  
 March 25-30.....Indianapolis, Ind., Annual Show, University Park, Indianapolis Automobile Trade Association.  
 March 29-30.....Geneva, N. Y., Annual Show, State Armory, Geneva Automobile Club.  
 April 6-13.....Ottawa, Que., Annual Show, Howitch Hall, Ottawa Valley Motor Car Association.  
 April 8-13.....Oswego, N. Y., Annual Show, Company D, Armory.  
 April 29-May 4.....Burlington, Vt., Annual Show, State Armory, Burlington Merchants Protective Association.  
 Sept. ....New York City, Rubber Show, Grand Central Palace.

### Race Meets, Runs, Hill Climbs, Etc.

- April 13.....New York City, Truck Parade, Motor Truck Club.  
 April 27.....Philadelphia, Pa., Annual Roadability Run, Quaker City Motor Club.  
 May 4.....Santa Monica, Cal., Annual Road Race, Motor Car Dealers' Association.  
 May 14-17.....Chicago, Ill., Commercial Vehicle Test, Chicago Motor Club.  
 May 30.....Indianapolis, Ind., Speedway, 500-mile race.  
 May 30.....Salem, N. H., Annual Hill-Climb, Chicago Motor Club.  
 June 30.....Algonquin, Ill., Annual Hill-Climb, Chicago Motor Club.  
 Aug. 8-10.....Galveston, Tex., Beach Meet.  
 Aug. 23-24.....Elgin, Ill., National Stock Car Races, Chicago Motor Club.  
 Sept. 2.....Indianapolis, Ind., Track Races, Speedway.  
 Oct. 5.....Philadelphia, Pa., Annual Fairmont Park Road Race, Quaker City Motor Club.  
 Oct. 7-11.....Chicago, Ill., Reliability Run, Chicago Motor Club.

Several classes of vanadium steels are made and in each class there is a variation in the carbon content. Ordinary carbon steels that are treated with vanadium can be obtained with nearly any carbon percentage that is desired. The first five in the accompanying table are of such metals. Vanadium steel can also be obtained in combination with nickel and called nickel-vanadium steel, as shown by the last one in the table; or it may be obtained in combination with chromium and called chrome-vanadium steels.

This last is by far the best steel as the figures in the table will show. Nickel-vanadium steels are now seldom used in automobile construction as they are about as expensive as the chrome-vanadium steels and nowhere near as good results can be obtained with them. The carbon-vanadium steels have been used to a considerable extent for the less important parts of a car as better results are obtained than with the ordinary carbon steels and their cost is not as high as that of chrome-vanadium, nickel-vanadium or nickel-chrome steels.

As with the alloyed steels, there is little to be gained by using it in the annealed state or as it comes from the steel mill. Its best properties are only brought out by the correct heat treatment and this heat treatment must be varied according to the work that the piece has to do. It is claimed for the vanadium steels that they will not fracture as readily as other steels when submitted to various kinds of vibrational strains or that they will be longer lived while being submitted to these strains. In numerous kinds of tests they have proven to be better in this regard than all other steels except nickel-chrome. This also might be due to the fact that much greater care and much better methods are used in manufacturing the vanadium steels than in manufacturing any other except nickel-chrome steel.

This, however, is not a question to argue here, as the fact remains that the steels that are called vanadium steels rank second only to nickel-chrome steels for most purposes where extreme strengths, wearing qualities and endurance are required. For the special steel that is required for leaf springs the silico-manganese steels are probably better owing to their having the fibrous grain that is specially suited to withstand the strains to which leaf springs are submitted. The very high nickel steels are also better adapted to resist the high heat to which valves are submitted than any grade of vanadium steel.

## Harking Back a Decade

FROM *The Motor Review*, March 20, 1902:

The Thorneycroft Motor Wagon Company of America has been incorporated at Trenton with a capital stock of \$900,000, with a provision to increase to \$1,100,000.

There is every indication that the Governor of New York will allow an appropriation of \$1,000,000 to be used in highway improvements under the Higbee-Armstrong act of 1898. This is an increase of \$400,000 over the amount contained in the legislation passed recently by the house.

The Federal Automobile Company of America, which received a very extended notice in these columns February 13, has been incorporated at Sioux Falls, S. D., for \$2,000,000.

F. B. Stearns has been fined \$20 and costs for overspeeding through the village of East Cleveland, O. The main street is well paved and has been a favorite testing field for the Stearns cars.

At the third annual dinner of the Automobile Club of America at the Waldorf last week, good roads were discussed from all viewpoints. The streets of New York City were compared unfavorably with those of other cities.

The Automobile Club of America has passed the following rule to prevent speeding during club runs and tours: "That should any member of the club pass the pacemaker he shall be suspended and on second offense he shall be expelled from the club."

To touch as lightly as possible upon a delicate subject, it is no secret that the condition of the automobile business in all its branches during the past fall and winter has been very far from satisfactory; and both makers and dealers are anxiously facing the question of what the future has in store.—*Editorial*.

Prof. F. B. Hutton, of Columbia University, gave an illustrated lecture on "Some Underlying Principles of Automobile Design" at last week's meeting of the A. C. A.

An automobile line is to be established between Grand Haven, Mich., and Highland Park.

The legislature of Rhode Island is contemplating a bill requiring motor vehicles to be equipped with a gilded numeral front and rear at least 2 inches high for the purpose of identification.

A bill to limit the speed of automobiles to 15 miles an hour has been favorably reported to the Massachusetts legislature.

About 2,000 shares of the New York Electric Vehicle Transportation Company, on which the assessment of \$10 a share remained unpaid, were sold at auction recently.

Discussion of the automobile as a therapeutic agent in cases of tuberculosis is arousing much interest abroad. It has been learned that it only begins to be efficient at 25 miles an hour; attains excellence at 35 miles an hour and is infallible at 50 miles an hour. The police, however, view such speeds as mere violations of the statute and not as medical treatment.

**Blackening Small Iron Parts**—A dipping method requiring two baths is recommended. The first produces a bronze coating. It is made by dissolving 10 weight parts of copperas in twice the weight of water, also 15 parts of chloride of tin likewise, mixing the two, adding 20 weight parts of hydrochloric acid and diluting it all in about 400 parts of water. The articles are immersed in this bath for 10 seconds, rinsed in water and immediately placed for 3 minutes in the second bath, which is composed of 3 1-4 pounds of "hypo" (sodium thiosulphate), 1-6 pound of hydrochloric acid and 2 1-5 pounds of water. It is produced by first dissolving the hypo in hot water, and the hydrochloric acid should not be added till the bath is to be used. There is a strong, visible action when it is poured in, and a yellow precipitate is formed which should be removed from the solution by filtering through muslin. After this bath the articles should be carefully rinsed with water and dried in sawdust.—From *Metal-Technik*, February 24.

# THE AUTOMOBILE

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## Dating Rubber Tires

THE recent controversies in New York State, precipitated by the Chanler bill, making it imperative to attach to automobile tires for sale the date of manufacture, has resulted in more or less false information being propagated throughout the state on the value of green tires; that is, tires immediately after manufacture.

Several have tried to show that a tire made in the rubber factory on March 1, 1912, is better than the same grade of tire manufactured in the same factory December 1, 1911, both being for use on March 15. This is not so. A tire six months old is just as good, in fact better, than one a week old. The only provision is that the six-months-old one must be kept at a proper temperature and under proper light. Both of these requirements are always lived up to by the legitimate tire maker and the legitimate tire dealer. It would be as sensible to assume that the big meat-packing houses of America do not provide and make use of proper refrigerating rooms for meat as to assume that tire makers do not use storage rooms with desirable light and required temperatures.

Tires are to-day being kept properly by makers and dealers, and the tire buyer—that is, the car owner—is not being cheated by purchasing legitimate stamped tires to-day, but only when he purchases unstamped and inferior goods from dealers who sell them as first-class tires.

All of the big tire makers have a serial number moulded on the tire, and this number carries the date of manufacture. Any dealer or any buyer can secure the exact date of manufacture if he wants to. A letter to the factory will accomplish this.

Tire makers are anxious to give any desired information on their product, but are opposed to the Chanler bill which provides for a tag attached to each tire bearing its date of manufacture. The makers do not want to conceal the date of manufacture, but they do not want to place a dangerous weapon in the hands of some unreliable dealers who handle tires; neither do they wish to deceive the buyer. If tires are so tagged there is nothing to hinder changing tags from new to very old second-grade tires. With the tagged tire the buyer is at the mercy of any unscrupulous dealer, who would be thus given a power that he might misuse and which, in fact, would almost invite misuse.

If tire buyers want the date of manufacture they can get it now from the maker, and get it correct, as it corresponds with the molded serial number, which any dealer cannot change; but the tire makers will go further, at least some of the leading ones have volunteered to do so, by offering to furnish to the Secretary of State at regular intervals the serial numbers of tires manufactured and also the exact date of manufacture of each. There could not be any quibbling with such a system. The dealer could not alter the moulded serial number on the tire and there could not be any deception. This would give the buyer all the protection he could possibly ask for.

Taking two tires made the same day and of the same quality and material, their value six months later depends entirely on how they have been stored in the interim. Bright direct sunlight is very injurious; certain temperatures are equally injurious, but the legitimate dealer knows this. If the buyer wants to know the tire's condition let him consider where it has been stored by the dealer, how long he has had it and the conditions of the storeroom. These are the best criteria in a matter of this kind.

Every tire dealer in New York State who is carrying on a legitimate trade should be opposed to the Chanler bill. It does not accomplish anything; in fact, it places a dangerous weapon in the hands of the unreliable tire dealer.

It would be impossible for tire companies to operate if only green or brand new tires were used. How could a concern building over 25,000 cars a year operate? These concerns have to keep building cars at a certain rate per week or month, often a car is two months old before sold. Frequently a dealer has a car on the floor of his salesroom several weeks before selling, as it is imperative to have tires on it during this period. In the tire factory similar conditions rule. The demand for tires may not be very strong in December, January and February, but the companies must keep on manufacturing, other wise they could not during the months of May, June, July, August, etc., supply the demand. It is only by making in advance that a year's adequate supply is possible. This is true in every other industry in the country. It is true of leather, textiles, etc. It is not necessary to have these stamped. They are kept properly, just as rubber tires are being kept properly for six or even eight months by manufacturers and dealers to-day.



## Improved Roads 8.33 Per Cent.

**Latest Figures Show Nation's Rights  
of Way Total 10,668,276 Acres,  
Valued at \$907,267,021**

WASHINGTON, D. C., March 15—According to the figures of the director of the office of public roads, published in THE AUTOMOBILE of February 22, Indiana leads all the states of the Union in mileage of improved roads. Most of the improved roads of that state and Ohio are composed of gravel and were, for the most part, built by the farmers in working out the taxes. In many cases the gravel is dumped on the road without proper spreading or rolling. Roads constructed in this way seldom give entire satisfaction.

The eight leading states, as shown by the data compiled by the director, in 1909, had the following mileage of good roads: Indiana, 24,955 miles; Ohio, 24,106 miles; New York, 12,787 miles; Wisconsin, 10,167 miles; Kentucky, 10,114 miles; Illinois, 8,914 miles; California, 8,587 miles; Massachusetts, 8,463 miles.

The total mileage of all public roads in the United States, in 1909, was 2,199,645 miles, while the total mileage of improved roads was 190,476, or 8.66 per cent.

The following states showed the greatest percentage of improved roads:

Rhode Island.....	49.14	Wisconsin .....	16.64
Massachusetts .....	49	New York.....	16.13
Indiana .....	36.7	Washington .....	13.19
Ohio .....	27.13	Maryland .....	12.77
Connecticut .....	24.08	Utah .....	12.23
New Jersey.....	22.76	Tennessee .....	11.66
Kentucky .....	18.82	South Carolina.....	11.02
Vermont .....	18.4	Maine .....	10.59
California .....	17.87	Michigan .....	10.01

The following states have between 5 and 10 per cent. of roads improved: Alabama, Delaware, Florida, Georgia, Illinois, Minnesota, New Hampshire and Oregon.

There are twenty-two states which have less than 5 per cent. of roads improved.

The average cost per mile of improved roads in the various states in 1909 was: Sand-clay, \$723 per mile; gravel, \$2,047 per mile; macadam, \$4,989 per mile; bituminous macadam, \$10,348 per mile. These figures are based on reports received from the officials of state highway departments and from counties, townships and other local subdivisions of the various states.

The following table shows the estimated cost of improved roads in the United States:

Roads	Mileage	Average cost per mile	Total estimated cost in U. S.
Stone .....	59,237	\$4,989.00	\$295,533,393.00
Gravel .....	102,870	2,047.00	210,574,890.00
Sand-clay .....	24,601	723.00	17,786,523.00
Miscellaneous .....	3,771	10,000.00	37,710,000.00
(Bituminous macadam, brick, etc.) grand total.....	190,479		\$561,604,806.00

On a basis of 40-ft. width, there are 10,668,276 acres of rights of way included in the public roads of the United States. Based on the average value of farm lands in the various states, the total value of these rights of way would amount to \$345,652,215, making a total, with the cost of improved roads of \$907,267,021.

### Louisiana and Mississippi Active

NEW ORLEANS, March 17—Never before in the history of Louisiana and Mississippi has there been as much interest in the advancement of good roads. The 'Frisco railway is operating a good roads demonstration car over the states. Other railroads are putting in sample sections of roadway and are furnishing the services of engineers free to all road projects. Bills providing for additional appropriations for good roads are pending in the legislatures of both states.

## Road Improvements in Iowa

**The Hawkeye State Is Waking to the  
Necessity of Better Highways—  
Clubs to Carry on Work**

DES MOINES, IA., March 15—The severe winter has in no way stayed the impetus given to good roads by automobile clubs and good roads associations last year, which put the entire state of Iowa in a fever heat over the question of road improvements and with new associations and clubs forming all over the state to carry on the work for 1912, Iowa will leap into the front rank of good road states.

Even with the competition of the organizations embracing the five associations controlling the remarkable highways across the state which includes, beginning on the north the Hawkeye highway and then going south successively the Transcontinental highway, better known as the White Post road, the River to River road, the Blue Grass road and the Wabansie trail which was started last season, the officials of the various associations feel that the good roads work has only begun and steps are being taken to improve each and every road more than ever this season.

On the north road, the Hawkeye highway, the same road betterment competition of last season will be continued.

On the White Post road under the guidance of Mr. W. C. Coan, of Clinton, Iowa, who is the father of the road, the details of signboarding and striping of the telephone poles marking the road will be finished. This road has the reputation of being the easiest road to follow in the state of Iowa and being practically an air-line route from the Mississippi to the Missouri, is one chosen by nearly all transcontinental tourists.

The River-to-River road from Davenport is to undergo a great deal of improvement. The stretch extending west from Davenport for 25 miles which was originally a macadam road was allowed to go to pieces. The well-known dragging system used almost daily will be supplemented by side road drainage on the level roads and along the hill roads.

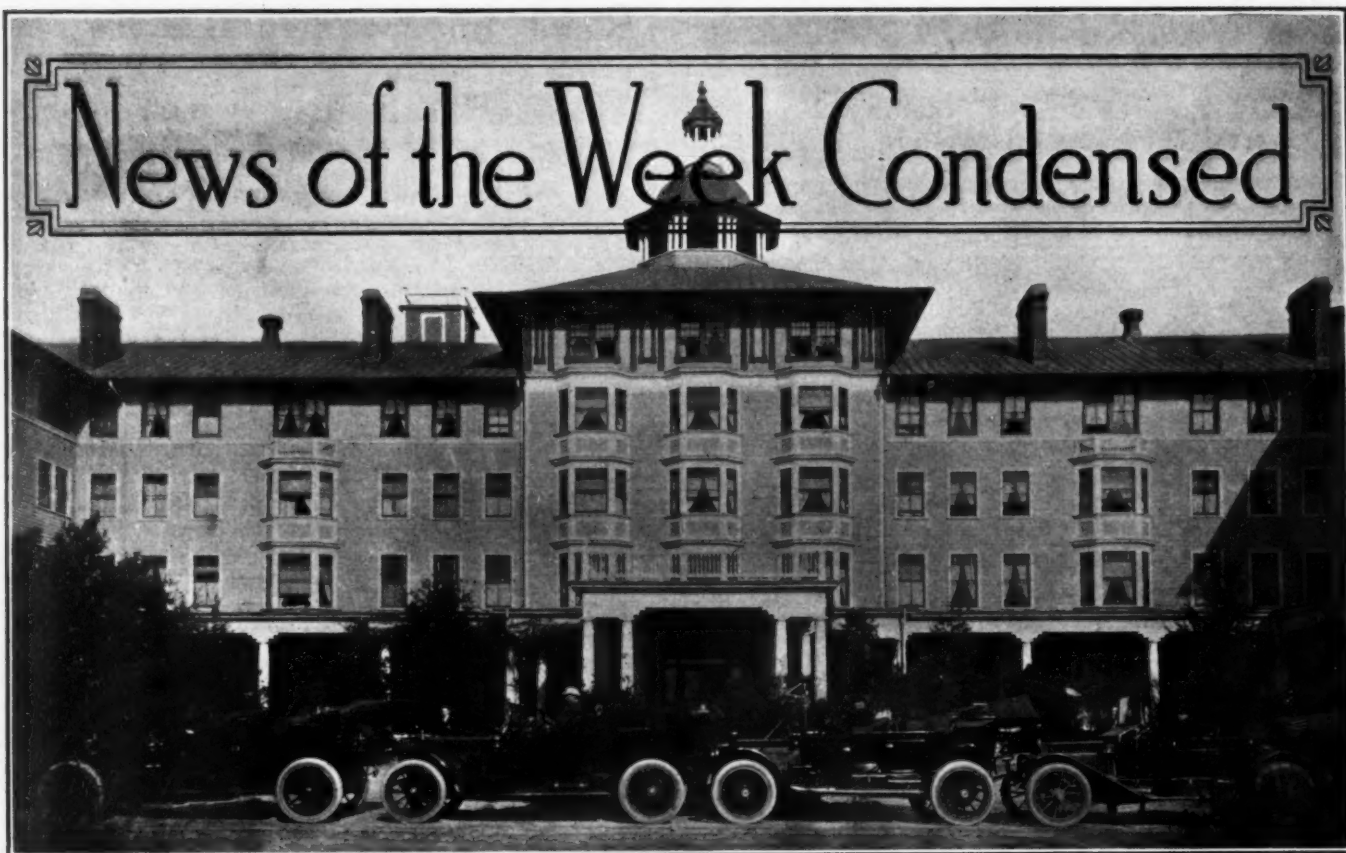
The Blue Grass Road Association under the direction of E. Corsepius of Fort Madison is planning still bigger things. The officials have held several conferences with the farmers along the route and through the efforts of various speakers on good road subjects a tremendous amount of enthusiasm has been stirred up. All the old wooden culverts have been slated for the discard, grades lowered and strong and finely built cement culverts will be erected this spring.

Connecting Burlington with Fort Madison a new road is to be built which will connect with the new boulevard being built south along the river to Keokuk. From this point, which is the start of the Wabansie trail, unusual efforts are being made to keep up the reputation established last season. Permanent road committees have been named which will have full charge of the road for years to come.

The state road commission is lending all sorts of assistance in the work, sending good roads experts and lecturers around to explain the work and it is enthusiastically expected that 1912 will see Iowa far ahead in the way of good roads and development of new route systems.

### Paraguay to Admit Buses Free

ASUNCION, PARAGUAY, Jan. 20—Congress has passed a bill admitting automobile omnibuses free of duty. The only restriction is that they must enter the country during the present year and must have a seating capacity for at least eight persons. This concession is made in connection with the agreement recently made with an English company for a regular service through certain streets of the city not reached by street cars and for service with several of the suburban towns.



Pierce, Thomas, Packard and Peerless starting from the Carolina, Pinehurst, on good roads work

**CENTER OF GOOD ROADS WORK**—Among the most attractive touring districts of the South is the country around Pinehurst, N. C., where the mixture of sand and clay affords a splendid road surfacing material. Numerous delightful tours have been laid out in this vicinity by Leonard Tufts, one of the leading figures in the movement for national good roads. The Carolina, a fine modern hotel, is frequently used as a base for automobile trips.

**To Erect Garage**—The Swaney Auto Company, Carroll, Ia., will put up a large garage.

**Ryman Buys Interest**—Nye Ryman has purchased a half-interest in the Bay City Auto Company, Houston, Tex., and is now in charge.

**To Handle Ohio**—The Ohio Motor Car Company of Missouri has been formed to handle Ohio cars exclusively in Kansas City and vicinity.

**Testing Motor Fire-Wagons**—The city of Marshalltown, Ia., is giving a combination chemical and hose car a thorough test in actual service.

**Lavigne Resigns**—J. P. Lavigne has resigned his position as chief engineer, demonstrator and designer of the Lavigne Gear Company, Detroit, Mich.

**Can Now Do Automobile Work**—The U-Auto-Varnish Agency, Minneapolis, Minn., has put in an enameling oven and has added an automobile finishing department.

**To Continue Marion and Lozier**—W. V. B. Campbell has sold his interests in the Parker Garage, Minneapolis, Minn., but will continue to handle the Marion and Lozier lines.

**Croxton Making Taxicabs Only**—The Croxton Company, Cleveland, O., is at the present time building taxicabs only, but intends to take up the pleasure car end of the business later.

**To Improve Garage**—The Maplewood Garage, Toledo, O., is to be completely renovated and its capacity will be doubled. No selling agency is to be connected with it. H. W. Bowers is manager.

**New Cartercar Building**—The Cartercar Chicago branch is to have a new three-story building. The first floor will serve as a salesroom, while the second and third will be used as a service station.

**Leases Garage**—L. D. Blackwelder and James Pepple have leased the Union Garage, Bedford, Pa., and have bought the equipment. They will conduct the business under the name of Blackwelder & Pepple.

**LaPorte a Manager**—R. H. LaPorte has been appointed New England sales manager for the Franklin Automobile Company, Syracuse, N. Y., with territory including Canada, the New England States and a portion of New Jersey.

**Form Automobile Club**—The automobilists of Zelienople, Pa., have organized a club with the following officers: President, C. D. J. Strohecker; vice-president, Dr. S. E. Ralston; secretary and treasurer, Charles S. Passavant, Jr.

**New Automobile Row**—A new automobile row is about to be created in Brooklyn, N. Y., on Flatbush avenue near Park place. The Packard Motor Company recently built a showroom and garage at Flatbush avenue and Eighth avenue.

**Minneapolis Tokheim Branch**—The Tokheim Manufacturing Company, Cedar Rapids, Ia., has opened a branch in Minneapolis, Minn., where it will keep a full line of gasoline measuring pumps and storage tanks. E. Sprague will be in charge.

**Hoffman's Territory**—L. E. Hoffman, Atlantic sales manager of the Franklin Automobile Company, Syracuse, N. Y., will have jurisdiction over eastern Pennsylvania and portions of New Jersey and West Virginia and the states of Delaware, Maryland, Virginia and the District of Columbia.

**Case Makes Engines**—The J. I. Case Company, Racine, Wis., manufacturing the Case car, is now engaged in the production of a large line of gasoline engines for all purposes, twenty styles being placed on the market. The largest type is for use in the gasoline tractor now being produced by the Case company.



**Hilbert Sells Out**—W. E. Hilbert, Hilbert, Wis., who has been in the garage business for several years, has sold out his interests.

**MacMurtry Resigns**—Alden L. MacMurtry has resigned from Gray & Davis, Boston, Mass. He is now with the Aristos Company.

**Adds Standard to Line**—J. N. Johnson, Michelin tire representative in Minneapolis, Minn., has added the line of the Standard Tire Protector Company.

**To Build Garage**—J. B. and E. J. Wittlin have formed a partnership and will erect a garage building in Menomonee Falls, Wis. They will handle the Ford.

**New Quarters for Penn**—Quarters are now being fitted up on North Hill street, New Castle, Pa., for the downtown display rooms of the Penn Motor Company.

**To Limit Use of Sirens**—An ordinance has been passed in New Orleans, La., to forbid the use of siren alarms on any cars other than those in the police, fire and hospital service.

**New Row for Minneapolis**—A new automobile and accessory row is to be built at Fourteenth street and Hennepin avenue, Minneapolis, Minn., by G. B. Bickelhaupt and C. A. Tuller.

**Dealers Organize**—In order to prevent price-cutting and inequitable trade deals which have demoralized the automobile business for the past years, dealers at Quincy, Ill., are taking steps toward the forming of a dealers' association.

**Motor Sprinklers a Success**—The best of service is resulting from the operation of the new motor street sprinkling wagon which was purchased recently by Pensacola, Fla. Work formerly requiring three teams is done by the new car.

**Jenks Absorbs Marathon Agency**—The Marathon Company, of Philadelphia, has been merged into the H. A. Jenks Motor Car Company, the latter concern to handle both the Marathon and Ohio cars. H. A. Jenks is president.

**Wants to Verify Taxi Fares**—Alderman John Ryan will introduce the Minneapolis, Minn., council a resolution providing for the purchase of a taxicab testing machine to be used on the taxicabs of the city once a month by the license inspector.

**New Eagle Tractor**—The Eagle Manufacturing Company, Appleton, Wis., has completed two models of a large gasoline tractor propelled by a four-cylinder, 60-75-horsepower engine using either gasoline or kerosene as fuel. Twenty-five tractors of this type will be marketed during the present season.

**Road Money for Iowa**—The ninety-nine counties of Iowa will get \$210,099.43 for use in improving their roads from the state automobile tax this spring. March 15 was the last day for money to be turned into the state treasurer at Des Moines before distribution of the funds for the April period begins.

**Minneapolis Will Buy Chassis**—The H. E. Wilcox Motor Car Company will lend the city of Minneapolis, Minn., a chassis on which will be built a fire-hose and chemical automobile at the city shops. If this is a success machines will be made in this manner in the future and only the chassis will be purchased.

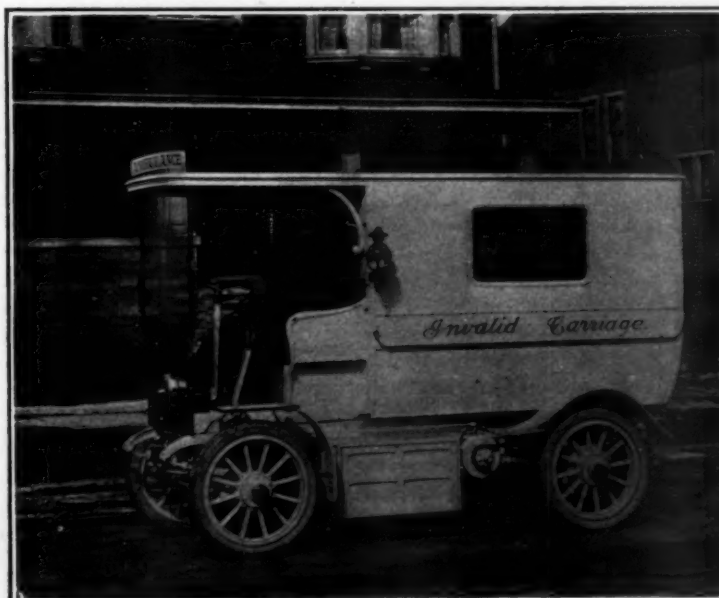
**Kearns with Ajax-Grieb**—Harry J. Kearns, assistant to Berry Rockwell, advertising manager of the Maxwell-Briscoe Motor Company, has severed his connection with that concern, having accepted a position as advertising manager of the Ajax-Grieb Rubber Company. Mr. Kearns replaces D. H. Wetzel.

**Big Canadian Merger**—Canadian Billings & Spencer, Ltd., which has been manufacturing automobile parts and fine forgings of various kinds at Welland, Ont., for the past 5 years, is one of the three Canadian manufacturing firms merged into Canadian Foundries & Forgings, Ltd., which has an authorized capital of \$1,250,000.

**To Revive Atlanta Climb**—Atlanta's annual hillclimb, for years the opening hillclimb in America, which was discontinued last year, will be revived again this spring. It will be run by the Atlanta Automobile and Accessory Dealers' Association instead of the Fulton County Association as in the past. The date will probably be April 6.

**Electric Ambulance**—Electric ambulances are rapidly winning wide popularity among physicians and undertakers. The physician appreciates the advantages of the electric ambulance and invalid carriage, not only because it is speedier than the horse, but also because it is sanitary, safe and silent. The illustration shows the Baker electric ambulance and invalid carriage as it appears in action.

**Iowa Touring Committee**—W. E. Moyer, Des Moines, Ia., president of the Iowa Automobile Association and president of the touring committee has announced the following members for his associates on the committee: W. J. Ellwanger, Dubuque; Edwin Delahoyd, Exira; Charles Kneedler, Sioux City, and J. T. Foster, Sioux City. The committee will meet soon and make arrangements for the Iowa tour, the annual endurance run to be held in June.



Side view of Baker electric ambulance



Rear view—getting the patient aboard



White motor truck with United States troops in China

**Scott Leases Garage**—William A. Scott has leased the garage at 111 West Thirty-seventh street, New York City.

**Davis Withdraws**—W. Wayne Davis has withdrawn from the W. Wayne Davis Company, Everett agents in Philadelphia.

**Rush for Licenses**—Twelve hundred license plates were issued in New Orleans, La., on the last day allowed by law for compliance with the new regulation.

**Truck for Brazil**—The Garford Company, Elyria, O., has received an order from Brazil for a 3-ton truck for hauling coffee on a plantation in that country.

**Hoffman Beaver Engineer**—R. C. Hoffman has been appointed head of the engineering department of the Beaver Manufacturing Company, Milwaukee, Wis.

**U. S. Tire Branch Moves**—The United States Tire Company has removed from Main street to its new and commodious quarters at 1121 Race street, Cincinnati, O.

**Luverne Company Adds Delivery Car**—The Luverne Automobile Manufacturing Company, Luverne, Minn., will soon place on the market a 1-ton delivery car chassis.

**Stevens-Duryea Agent Moves**—T. Lamar Jackson, Washington, D. C., agent for the Stevens-Duryea, has removed from 1218 Connecticut avenue to Fourteenth and R streets, N. W.

**Will Sell Motor Starter**—An agency was opened in Buffalo, N. Y., this week by the Niagara Sales Company for the sale of the Niagara motor starter. Arthur H. Messersmith is in charge.

**Jacoby Joins Standard**—C. W. Jacoby, formerly sales manager of the Babcock Company, Buffalo, N. Y., has joined the force of the Standard Electric Car Company, Jackson, Mich.

**Patrol Wagons Efficient**—Thorough tests of the automobile patrol wagons now being used by the city of New Orleans, La., have proven their worth and have shown a saving over the horse-drawn wagons which they replaced.

**To Represent Overland Abroad**—Claude A. George, assistant sales manager of the Willys-Overland Company, leaves March 20 for Hamburg, Germany, there to locate permanently as foreign representative of Toledo's mammoth concern.

**Bradfield New England Manager**—The Velie Motor Vehicle Company has appointed Fred E. Bradfield, formerly connected with the Velie Chicago branch, manager of the branch at Boston, Mass., which covers the New England States.

**Buys Big Motor Plow**—So successful has been the operation of a motor plow recently installed at Lockport, La., that a much larger plow is to be placed in the service of the Delta Farm Company at that point. The new motor plow has a total weight of 9 tons.

**Motor Apparatus for Youngstown**—Horses will be done away with in the fire department of the city of Youngstown,

O., and all equipment will be motorized. For the purpose of raising funds to establish motor apparatus the city council has approved a \$70,000 bond issue.

**Plant Reopened**—The plant of the Clark Automobile Company, Shelbyville, Ind., which went into the hands of a receiver recently, has been opened and several men put to work to finish the machines in course of construction. The orders now on the books will be filled, if possible.

**Assets of Norwalk**—A. J. Schur, trustee for the creditors of the Norwalk Motor Car Company, Norwalk, O., has filed his second account with the court, which shows a balance of \$4,220 for distribution among the creditors of the concern. This will mean another dividend of about 5 per cent. to the creditors.

**Electric Company Organized**—The Electric Manufacturing Company has been organized at Racine, Wis., and established a plant on Prospect street. The main owners are John Ruggaber, Tollef Tollefson and Andrew Nelson. All kinds of electric devices will be manufactured, patents being owned by the members of the company.

**Studying Motor Fire Apparatus**—Norwood, one of Cincinnati's suburbs, is about to make material additions to its fire department and to this end its city council is experimenting with automobile apparatus. Several different types of motor hose wagons and fire engines have been inspected and practical demonstrations given the council.

**Griffin Goes to Herschede**—In order to further improve its fast-growing service department, the Herschede Motor Car Company, of Cincinnati, has secured the services of Shirl Griffin, of Cleveland, O., who will act as factory manager. Mr. Griffin has been in charge of the service department of the Rauch & Lang Carriage Company.

**Gasoline Tested**—Several tests of gasoline were conducted by President Bixler, of the Kenton, O., Automobile Club, at a meeting of the club recently. A German barometer was used and several of the samples tested 59 degrees. It was the understanding that the law required gasoline to test 66 to 68, and the matter was referred to the legislative committee.

**Take Truck to China**—That the army appreciates the motor truck is shown in the accompanying illustration which depicts the White truck, which the American troops took with them from the Philippines when ordered to China recently, being unloaded from the army transport *Logan* at Chin-wang-tao, North China. The army is using eight more trucks in the Philippines.

**Signal Devices Unpopular**—The proposal of the Louisiana Motor League, New Orleans, La., that rear signaling devices be investigated with the idea of fixing on some general system for general use, has developed the fact that few owners of cars care to consider the installation of any rear signaling system. To establish a costly and complicated lighting system is held to be a hardship on owners which is not warranted by the resulting benefit.

**To Install Electric Department**—The Rose Hill Garage Company, Cincinnati, O., of which Ed. H. Jungclas is manager and which distributes the Ohio electric, has leased the store-room at 808 Race street and will adapt it to the company's needs. The concern is building a fireproof garage in Rose Hill, Avondale, and intends using the Race street store as a branch with installation of a department thoroughly equipped to handle all supplies pertaining to electric cars only.

**Many Trucks in Indianapolis**—There has been a large increase in the use of motor trucks in Indianapolis, Ind., in the last few months. The National Refining Company has recently placed in its city delivery service a 3-ton truck, the body of which is an immense oil tank. Kingan & Company, meat packers, are also using a 3-ton truck for city delivery work, which does the work formerly accomplished by two four-horse teams. The Indianapolis Water Company is using a big truck for distributing its water mains and other supplies for laying new mains.



**Edenburn Joins Remy**—W. D. Edenburn has been appointed publicity and assistant advertising manager of the Remy Electric Company, Anderson, Ind.

**Garage for Taylor**—Dozier Brothers, owners of the City Garage, Taylor, Tex., have let the contract for the construction of a large, sheet-iron and cement garage. Work has already begun and the building will be rushed to completion.

**Adds Night Force**—Owing to the greatly increased orders the Beaver Manufacturing Company, Milwaukee, Wis., has been forced to add a night crew and the factory is running day and night.

**Green Resigns**—O. L. Green, auditor of the Beaver Manu-

facturing Company, Milwaukee, Wis., has been forced to resign on account of ill-health. He is succeeded by F. S. Johnston.

**New Rayfield Representatives**—Findeisen & Kropf Mfg. Company, of Chicago, have secured the Hall Motor Supplies Company, of Toronto, Canada, as their Canadian distributors of Rayfield carbureters and have also added to their already long list the R. C. Hull Electric Company, of Cleveland, O.

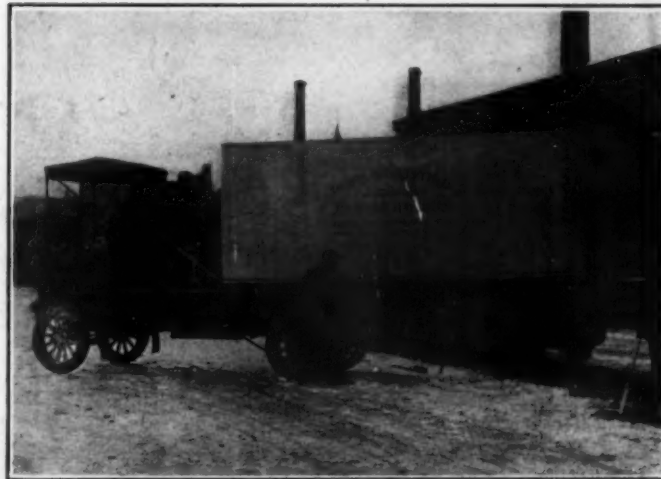
**Shipping a Car**—The accompanying illustration shows a Pope-Hartford pleasure car boxed for export shipment and being loaded into the freight car from a Pope-Hartford 3-ton truck. So carefully are these cars boxed that over a period of 10 years the Pope company has not received a single complaint of damage.

**Tri-cities Want Highway**—The Davenport, Ia., Automobile Club, the Tri-city Automobile Dealers' Association and the three automobile factories of Moline, Ill., in addition to the Commercial clubs of the three cities are making every effort to have the Lakes-to-the-River highway, now being promoted by Chicago automobile enthusiasts, meet the Mississippi at the Tri-cities instead of at Clinton.

**Connecticut Law Good**—The Secretary of State of Connecticut is collecting statistics from various states showing the number of fatalities resulting from automobile accidents. The statistics already gathered are highly creditable to the Connecticut law. That state had but twenty deaths from this cause in 1911, while Rhode Island had twenty-six and Massachusetts 110. New York City had 148 deaths; Providence, R. I., nine, and Buffalo, N. Y., fourteen.

**Luverne in Twin Cities**—The Luverne Automobile Sales Company has been formed with E. F. Bauer as Minneapolis manager and A. G. Bauer as St. Paul manager. It will handle the product of the Luverne Automobile Manufacturing Company, of Luverne, Minn. Salesrooms will be maintained in both cities. The Luverne company announces it will build a 1-ton capacity delivery car chassis. The power plant will be the Luverne 40-horsepower motor with heavy-duty transmission. The car will be furnished also with covered delivery body.

**Total Includes Driver's Wages**—In the February 22 issue of THE AUTOMOBILE, in a story showing the cost of Minneapolis service cars, an unintentional injustice was done the Mitchell car used to carry engineers to and from the filtration plant. This car was purchased by the city water works department and in the 5 months from June to October, 1911, inclusive, the cost of operation per mile was 19 cents including operator's wages. Exclusive of operator's wages the cost was about 14 cents. In the article in question no mention was made of the fact that the total cost per mile of the Mitchell included chauffeur's wages.



Shipping a Pope-Hartford pleasure car by means of a Pope-Hartford truck

## Automobile Incorporations

### AUTOMOBILES AND PARTS

**ALBANY, N. Y.**—Moyer Auto Sales Company; capital, \$5,000; to engage in the automobile business. Incorporators: W. D. Phelps, W. R. Rose, S. C. Shaver.

**AUGUSTA, ME.**—Jackson Petroleum Motor Company; capital, \$500,000; to manufacture and sell internal combustion engines. Incorporators: E. M. Leavitt.

**CINCINNATI, O.**—Cincinnati Motors Company; capital, \$10,000; to manufacture automobiles and motor trucks. Incorporators: F. Alter, J. B. Doan, H. T. Alter.

**CLEVELAND, O.**—Bingham Motor Car Company; capital, \$10,000; to engage in the automobile business. Incorporators: H. Bingham, C. N. Fiscus, C. F. Schrod, E. E. Thomas, W. H. Gillie.

**DETROIT, MICH.**—Keeton Motor Company; capital, \$10,000; to manufacture and sell automobiles. Incorporators: W. Brotherton, N. Brotherton, W. G. Houck, F. M. Keeton, W. V. Moore, E. H. Moore, W. W. Wuchter.

**DOVER, DEL.**—Great Eagle Motor Devices Company; capital, \$130,000; to manufacture and sell automobiles, motor boats and self-propelled vehicles of all kinds. Incorporators: G. Hagstrom, I. Hagstrom, H. W. Davis.

**FREEHOLD, N. J.**—Freehold Motor Company; capital, \$10,000; to conduct a general automobile business. Incorporator: F. D. Bennett.

**HOUSTON, TEX.**—Twiford Auto Manufacturing Company; capital, \$400,000; to manufacture and sell automobiles and motor trucks. Incorporators: M. J. Moore, J. N. Groesbeck, M. J. Moore, Jr., R. E. Twiford, F. M. Robinson, W. E. Richards, W. C. Berry.

**JERSEY CITY, N. J.**—Excelsior Specialty Company; capital, \$30,000; to conduct a general automobile business. Incorporators: F. Thomassin, F. D. Lockwood, A. Higson, G. H. Martens, C. S. Goodfellow.

**NEW YORK CITY.**—Standard Resilient Wheel Company, Inc.; capital, \$500,000; to manufacture patent wheel for automobiles, etc. Incorporators: J. Gaynor, P. B. Verplanck, S. Jochelson.

**ORANBURG, S. C.**—Carolina Motor Company; capital, \$5,000; to engage in the automobile business. Incorporators: C. A. Stroman, J. M. Zeigler, N. T. Zeigler.

**PHILADELPHIA.**—H. A. Jenks Motor Car Company; capital, \$50,000; to conduct an automobile business. Incorporator: H. A. Jenks.

**PORTLAND, ME.**—Gray Auto & Supply Company; capital, \$10,000; to manufacture, sell, export and import automobiles. Incorporators: H. P. Sweetser, W. J. Hardy, H. H. Sweetser.

**TOLEDO, O.**—Erie Supply Company; capital, \$10,000; to buy and sell automobiles and supplies, bicycles, motor-cycles and motors of all kinds. Incorporators: W. J. Fritsche, F. H. Kruse, J. Samson, F. A. Brown, M. Winchester.

**WILLIMANTIC, CONN.**—Turnbull Auto Company; capital, \$25,000; to buy and sell automobiles and supplies. Incorporators: D. A. Turnbull, F. J. Wood, W. M. Turnbull, A. Turnbull, E. G. Wood.

### GARAGES AND ACCESSORIES

**AKRON, O.**—Akron Motor Washer Company; capital, \$10,000; to manufacture motor washers and washing machines. Incorporators: John Bauer, G. W. Sieber, M. F. Wolf, Joseph B. Sieber, M. Bauer.

**ATLANTA, GA.**—Auto Life Guard Company; capital, \$100,000; to manufacture automobile guard. Incorporator: W. W. Talbot.

**BOWLING GREEN, O.**—Modern Vulcanizing Company; capital, \$5,000; to do tire vulcanizing. Incorporators: E. M. Fries, R. A. Hunter, O. R. D. Hunter, A. M. Fries, J. H. Lincoln.

**BROOKLYN, N. Y.**—Ocean Hill Garage, Inc.; capital, \$1,000; to conduct a garage. Incorporators: Harry Umansky, Samuel Umansky, Joseph Umansky.

**DETROIT, MICH.**—Detroit Auto Training School; to instruct pupils in the art of automobile driving; capital, \$5,000.

**DETROIT, MICH.**—Hydraulic Oil Storage Company (name changed to Hydraulic Oil Storage and Engineering Company); capital, \$50,000.

**DETROIT, MICH.**—United States Starter Corporation; capital, \$10,000; to manufacture and deal in motor starters and other automobile accessories. Incorporators: Jacob G. Merithew, Frank S. Salter, William A. Staley.

**DETROIT, MICH.**—Wilkinson Motor Starter Company; to manufacture and sell motor starters; capital, \$50,000.

**NEWARK, N. J.**—Weldon Roberts Rubber Company; capital, \$100,000; to manufacture rubber goods. Incorporators: W. Roberts, P. F. Campbell, A. H. Sonn.

**NEW BRUNSWICK, N. J.**—New Brunswick Garage Company; capital, \$25,000; to operate automobile garages. Incorporators: J. Weigel, Jr., O. F. Bentell, W. Silzer.

**NEW YORK CITY.**—Auto Mechanical Devices Company; capital, \$10,000; to manufacture devices of all kinds for automobiles and engines. Incorporators: Louis H. Smith, John Sommer, Henry G. Ingersoll.

**NEW YORK CITY.**—Mayer Auto Specialties Company; capital, \$15,000. Incorporators: Simon G. Mayer, Albert L. Kull, James McBrien.

### INCREASES OF CAPITAL

**INDIANA HARBOR, IND.**—Central Auto Supply Company; increase of number of shares of stock and reduction of par value, making six hundred shares at \$1 each.

**INDIANA HARBOR, IND.**—Northwestern Automobile Club; \$1,500 to \$100,000.

**Prudential Opens Branch**—The Prudential Tire Company has opened a branch at 1565 Fifth street, San Diego, Cal. It is in charge of Edward Gill.

**Harding Sells Out**—L. A. Harding, one of the organizers of the Nob Hill Garage & Auto Company, Portland, Ore., has disposed of his interest in the concern to H. E. Jaggar. The business will be conducted as before.

**New Police Car**—The Indianapolis, Ind., board of safety has purchased a 60-horsepower Premier to be used as an emergency car by the police department. It is reinforced in several places to make it suitable for all sorts of rough work.

**Augusta Has New Motor Patrol**—The Augusta, Ga., police department has a new six-cylinder Lozier police patrol. It seats ten persons exclusive of driver and attendant. A stretcher is provided, making the patrol available for ambulance purposes.

**Makes 1,000 Tubes a Day**—In the March 7 issue of THE AUTOMOBILE the statement was made that the capacity of the new plant of the Lee Tire & Rubber Company is 100 tubes a day. This was a typographical error as the capacity of the factory is 1,000 tubes a day.

**Builds Largest Hotel 'Bus**—The largest double-deck hotel omnibus in the world has recently been built in Los Angeles and will be used by a southern California hotel. The capacity of the vehicle is fifty passengers. The 'bus is built on a Mack chassis and with a capacity load will easily average 15 miles an hour.

## New Agencies Established

**Abbott-Detroit**—Omaha, Neb., and Sioux City, Ia., W. L. Huffman Automobile Company.  
 Fort Dodge, Ia., Tremain & Rankin Auto Company.  
 Rock Island, Ill., Totten Automobile Company.  
 Wellsburg, Ia., Tjaden Automobile Company.  
 Minneapolis, Minn., Robertsen Motor Car Company.  
 Kansas City, Mo., Kaw Valley Automobile Company.  
 Peoria, Ill., M. M. Baker & Company.  
 Des Moines, Ia., Johnston Motors Company.  
 Grafton, N. D., J. W. McKay.  
 Oskaloosa, Ia., Oskaloosa Vehicle & Auto Company.  
 St. Paul, Minn., Burney Bird Auto Company.  
 Quincy, Ill., Fischer Motor Car Company.  
 Dubuque, Ia., A. F. Schrup & Company.  
 Mason City, Ia., Barclay-Morton Auto Company.  
 Milwaukee, Wis., Bates-Odenbrett Auto Company.  
 St. Louis, Mo., Missouri Motor Car Company.  
 Duluth, Minn., W. D. Rightmire.

Burlington, Ia., D. B. Smith Auto Company.

Grand Rapids, Mich., J. H. Fox.

Benton Harbor, Mich., E. F. Shriver.

Newark, O., Licking Motor Car Company, for Licking County.

**Cino**—Topeka, Kan., Chapell Foote & Company.

**Cole**—Cincinnati, O., Cole Motor Sales Company, with Albert H. Luhrman as manager.

**Enger**—Agency and service plant at Sutherland, Ia. Atlantic City, N. J., Paul Taylor.

**Flanders Colonial Electric**—Buffalo, N. Y., Excelsior Sales Company, William F. Hanavan, president and general manager.

**Franklin**—Hastings, Neb., E. A. Brandes.

New Windsor, Md., W. Edward Baker.

**Halladay**—Cissna Park, Ill., A. J. Aeschlimann.

Springfield, Ill., Canterbury & Drake.

Manlius, Ill., F. S. Dabler.

Thornville, O., T. F. Sevits.

St. Cloud, Wis., Peter Entringer Company.

Iowa Falls, Ia., W. G. Gohring.

Waterloo, Ia., Ralph W. Slippery Auto Company.

Macon, Ga., J. H. Schofield Auto Company.

Jacksonville, Fla., H. T. Armington & Son.

Auburn, Ind., Halladay Sales Agency.

Sioux City, Ia., Halladay Motor Car Company.

**Havers**—Baltimore, Clinton R. Foutz, of the Charter Automobile Company for the State of Maryland.

**Imperial**—Toledo, O., Charles J. Lauer.

**Lincoln Light Delivery**—Philadelphia, Steckel Motor Truck Company, V. H. Steckel, proprietor.

**National**—Sioux City, Ia., Iowa Automobile & Supply Company, Des Moines, Ia., has placed a sub-agency.

**Ohio**—Kansas City, Mo., A. J. Leatherock, for the Southwest.

**Overland**—Manchester, O., F. A. McCormick.

West Union, O., C. M. Gibboney.

Bucyrus, O., Wilbur S. White, for Crawford County, O.

**Pullman**—Minneapolis, Minn., Eugene Fogg.

**Regal**—Washington, D. C., Storm Motor Car Company, agent for National and Hudson, will represent the Regal in same territory.

**Republic**—Memphis, Tenn., Chickasaw Motor Car Company, for western Tennessee, Arkansas and northern Mississippi.

**Studebaker**—Annawan, Ill., Dr. R. T. White, for the western part of Henry County.

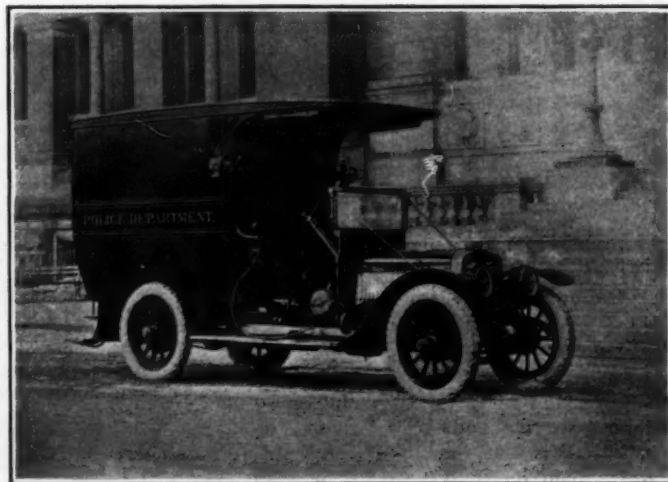
**Thomas**—Philadelphia, Pa., Grantley P. Postles, for Philadelphia, southern New Jersey and Delaware.

**United Motors**—Hillsboro, O., Hillsboro Implement Company.

**Warren-Detroit**—Minneapolis, Minn., Arthur E. Kelley.



New Premier emergency car for Indianapolis police



Lozier motor patrol for Augusta, Ga., police department





New truck shops of the Packard Motor Car Company in Detroit

**NEW PACKARD TRUCK SHOPS**—The new truck shops of the Packard Motor Car Company in Detroit occupy about one city block. The lower floor embraces a continuous and unobstructed area exceeding 100,000 square feet, and the construction is such that additional floors are provided for. These shops are turning out five trucks daily.

**New Branch for Bergdoll**—The Bergdoll Machine Company is considering the establishment of a branch plant, in all likelihood at Trenton, N. J., for the manufacture of motors and transmissions of a special design.

**May Enlarge Its Plant**—The Racine Manufacturing Company, Racine, Wis., which makes, among other things, automobile bodies, contemplates the erection of a group of new buildings during the present year at a cost of \$800,000.

**Galion Secures New Company**—A new automobile plant will shortly be established in Galion, O., under the name of the Cleveland-Galion Motor Truck Company. Local parties subscribed \$76,500 towards the total capitalization of \$500,000.

**To Build Taxicabs in Flushing**—The Watson Engineering Company, of Manhattan, has leased part of the old Bogart factory on Lawrence street, Flushing, and will begin the manufacture of taxicabs as soon as the necessary machinery can be installed.

**New Dorris Power House**—The Dorris Motor Car Company, which is building a new factory at Sarah street and Laclede avenue, has obtained a building permit for a power house in connection with the plant. It will be a one-story building and will cost \$7,200.

**Diamond Building**—Work has been started by the Diamond Rubber Company, of Akron, O., for a six-story building to be 275 feet long as an extension to No. 15 building, which is used for the manufacture of automobile tires. It will be one of the largest buildings of the Diamond factory.

**Evinrude Expands**—The Evinrude Motor Company, Milwaukee, Wis., has awarded contracts for the erection of a \$25,000 plant on Walker street, between Reed and Clinton. It will have 42,000 square feet of floor space. The line of products will be extended when the new works are finished.

**Texas Truck Company**—The Twyford Auto Manufacturing Company has been organized at Houston, Tex., and has purchased 30 acres of ground in South Houston on which is located a modern machine shop and a large foundry building equipped with excellent machinery. There is also a handsomely fitted office building on the plot.

**To Build Scientifically**—The new Stevens-Duryea factory at East Springfield, Mass., is to be constructed on scientific lines. One of the first buildings to be erected on the 40-acre plot of ground will be but one story in height to avoid the necessity of moving heavy parts by elevators and similar difficult tasks. The building will be 500 feet long and 80 feet wide.

**Tire Plant for Warwood**—Warwood, W. Va., is to have a manufacturing plant capitalized at \$100,000. The plant will be for the manufacturing of automobile tires of all kinds and grades. The old steel-ceiling plant in North Warwood, which has been in operation for a long while, has been bought and will be made much larger for the tire industry.

**Will Build Goby Factory**—The Goby Engine Company, Cleveland, O., recently incorporated to manufacture the Goby slide-valve engine for the trade, will shortly begin the erection of a large plant. The company is at present occupying the building formerly used by the American Ball Bearing Company. Christian Girl is the general manager of the company.

**Another Cincinnati Firm**—A sixth firm has entered the field of automobile makers in Cincinnati, O. Franklin Alter, Harry T. Alter and J. B. Doan have purchased from the Power Car Company all drawings, patterns, fixtures and materials which have been used in their business and have formed the Cincinnati Motors Company. The product will consist of pleasure cars, delivery wagons and trucks.

**Plans Additions**—In order to accommodate the expanding business of the Willys-Overland Company further extensive additions will be erected in the near future. Plans are now being prepared for a saw-tooth structure 300 feet long and 181 feet wide. The structure will be erected on the 15-acre Ellis tract recently purchased. Plans are also being drawn for a new three-story office building, 180 feet long and 80 feet wide.

# Newest Ideas Among the Accessories

Self-Starter Novelties; 10-Day Clock; Folding Windshield; Red Head Plug Wrenches; Centrifugal Speedometer; Hand-Operated Exhaust Horn

## New Self-Starters

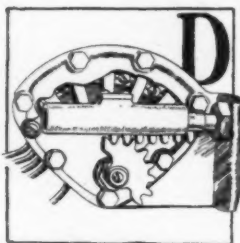


Fig. 1—Panwood distributor

**D**URING the past three months several new self-starters have been placed on the market. The Hanna starter, Fig. 2, made by Valentine & Company, Syracuse, N. Y., is of the acetylene type. It comprises a simple gas conduit and a pump mounted under the driver's seat, or on the dash. To the latter are attached two valves; the lower one serves to regulate the flow of acetylene admitted from the tank to the starting system and the upper to connect the tank to the engine cylinders and to cut it off therefrom.

The operation of the starter is as follows: The lower valve being adjusted when installing the system, it remains undisturbed, and to admit gas to the motor the upper valve is opened. Acetylene then flows to the pump, lifting the light piston and plunger and filling the pump cylinder with a charge of gas. Then the upper dash valve is closed and the plunger pushed into the pump, forcing the acetylene through the tubing and the T-piece into the horizontal pipe leading to the cylinder priming cups. There is but one such pipe, but as its diameter is considerably in excess of that of the orifices connecting the pipe with the cylinders the gas flows to all four of them, and overcoming the small resistance of the ball checks inside the priming cups, enters all the cylinders. Then a charge of air is drawn into the pump through a vent in its top portion by pulling up the plunger; and the latter is pushed down to inject the air into the cylinders and produce a combustible mixture.

The Paris self-starter, Fig. 3, is a lighting-generator, which acts in connection with a storage battery, producing electric current when the car is running and starting the engine on this current by drawing upon the battery. The generator, when acting as a starter, is chain-gearied to the crankshaft with a ratio of 30 to 1, but is disengaged by the driver as soon as the engine starts, being then driven as a dynamo at three times engine speed. A multiple-contact button on the dash is pressed to make the dynamo serve as a motor and its release transforms it again into a generator. It is made by the Paris Electric Starter Company, Chicago.

The Panwood acetylene starter, Fig. 4, is made by the Panwood Manufacturing Company, Grand Rapids, Mich. There is one lead from the tank to the distributor, Fig. 1, and individual

leads from the latter to the cylinders. The construction of the distributor is novel, being shown in the initial illustration. A kick pedal on the dash forces the rack forward, which turns the sector. This lifts the cams which control the valves in the five gas leads, so that acetylene is admitted from the tank lead into the four others. The rack-attachment which lifts the cams does so only on the forward movement, but not on its return, which is brought about by a coiled spring.

## Columbia Windshield

The Columbia Tire & Top Company, 1014 Commonwealth avenue, Boston, Mass., is the manufacturer of the windshield shown in Fig. 9. This product is made of light metal covered with leather. The transparent portions are of isinglass, or

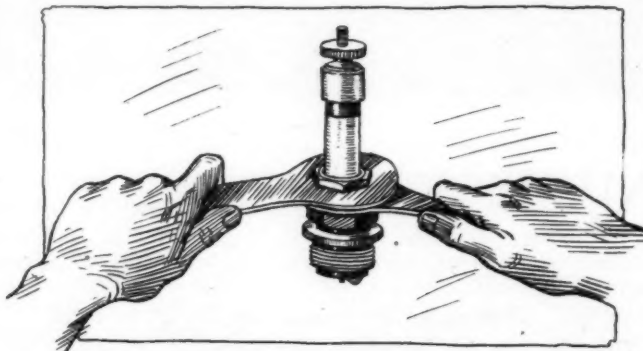


Fig. 5—Red Head spark-plug loosening wrenches

mica, to prevent breakage and rattling, which the use of glass entails at times. Neat appearance, light weight and strength are the principal features of this design made in several colors.

## Waltham 10-Day Clocks

The latest creation of the Waltham Watch Company, Waltham, Mass., is seen in Fig. 8; it is a 10-day timepiece, adjusted to temperature and equipped with two extra long main springs. The watch has a steel barrel and runs on 15 jewels. A Breguet hairspring is used, as well as a patent winding indicator or warner. This comprises a hole through which shows a normally white disk, but which turns red 8 days after the clock has been wound. The timepiece runs 2 more days, making its total

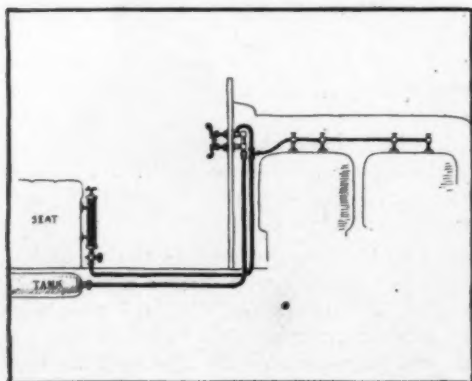


Fig. 2—Hanna acetylene self-starter

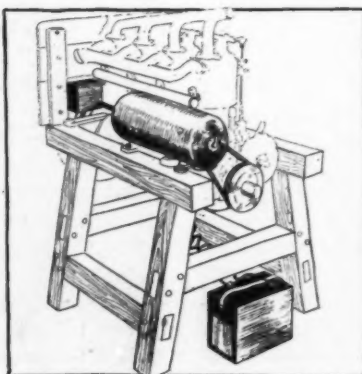


Fig. 3—Paris electric starter

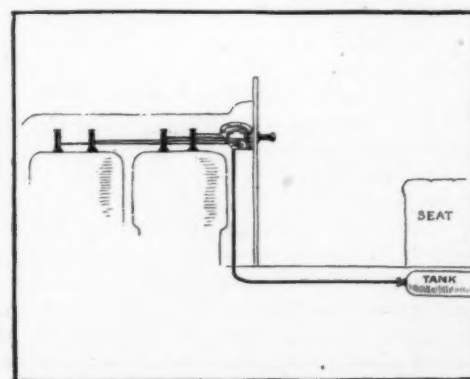


Fig. 4—Panwood starting system



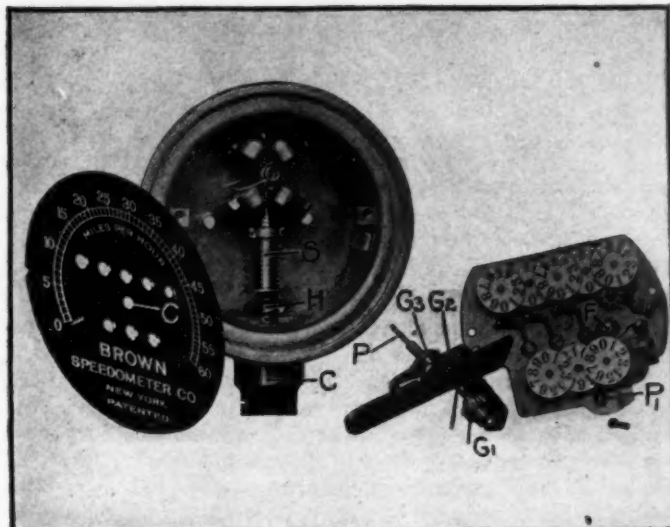


Fig. 6—Component parts of the Brown centrifugal speedometer

time capacity 10 days. Model S has a visible stem, while model D has a larger casing in which the winding stem is invisibly contained.

### Red Head Plug Wrenches

The wrenches shown in Fig. 5 were evolved by the Emil Grossman Company, New York City, to facilitate the handling of Red Head spark-plugs made by them. The plug consists of an iron shell fitting into the cylinder head and presenting a ground connection while the positive electrode is contained in a porcelain of high resistance, which core is held stationary in

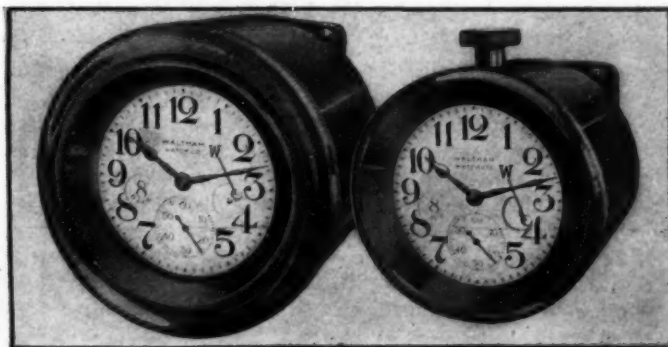


Fig. 8—Two types of the new Waltham 10-day auto clock

the shell by means of a bronze retaining nut, threaded to fit into the mantle. The smaller wrench fits around the nut, while the larger one takes in the hexagonal iron shell, so that by turning these two wrenches in opposite directions or by holding one stationary and turning the other the porcelain core may be removed from out the shell. These wrenches are given gratis to purchasers of Red Head plugs.

### Brown Speedometer

The Brown speedometer, Fig. 6, is of the centrifugal type in which a governor carried by the indicator shaft moves the finger on the dial to a position indicating the speed at which the shaft is rotated. In the device here shown the drive is taken through a flexible shaft connected to the end of the vertical speedometer shaft in the connecting link C. The shaft carries a helical gear H which is integral with it, and a sleeve S1 toothed as a rack and fastened to the central portion of the governor, the four weights of which are seen at G. The gearwork G1, G2, G3 is so fitted into the casing that G1 meshes with the rack sleeve S1, so that the gear is at rest when the rack is in its normal position, but is rotated in the same measure as the rack is raised on the

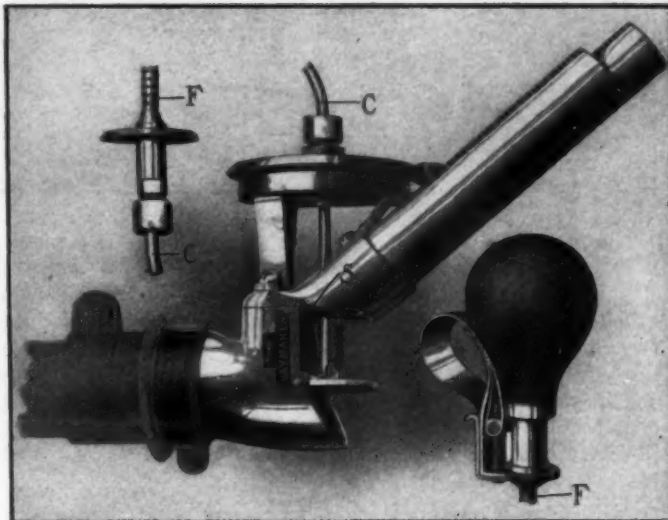


Fig. 7—New type of Waymaker horn operated by bulb

shaft by the governor being deflected from its axis. Gear G1 drives G2 and the latter G3, the shaft of which carries the finger traveling over the 60-mile speed scale. An odometer and a trip-meter are combined with the speedometer. Both are actuated by the same finger F, which is attached to the hub of a ratchet on the back side of the odometer disk. A shaft threaded to mesh with the helical gear H is equipped with an eccentric which turns over the ratchet and finger F, whereby the trip and odometer are alternately advanced. A trip reset is included in the device, which is made by the Brown Speedometer Company, New York City. Excepting the steel shaft all working parts are made of bronze and the casing of highly polished brass.

### Bulb Exhaust Horn

The new style of Waymaker exhaust horn, Fig. 7, is distinguished by the use of a bulb in its operation. The horn is of the exhaust type, being affixed to the muffler by a gas-tight coupling and consisting principally of a valve and two pipes. When the valve is open, which is normally the case, the exhaust leaves the coupling and horn body without making a sound, but if the valve is closed against the tension of the spring the hot gases are forced to pass through a thin slot S, whence they flow into the pipes. The latter act in the way of organs and produce a melodious sound. By pressing the bulb the air is forced through the flexible casing F to move a valve in the same, thereby pushing a cable rod C, which closes the valve over the exhaust passage. The Waymaker horn is made by the Lee Tire & Rubber Company, Conshohocken, Pa.



Fig. 9—Columbia lightweight folding windshield

# Patents Gone to Issue

**SHOCK-ABSORBER**—Being of the cylinder and piston type.

This patent covers an absorber, Fig. 1, composed of a cylinder containing a hollow piston and piston ring, the latter being covered with a friction material. A piston rod is movably arranged through the piston to reciprocate the latter, and means are contained in the piston for adjusting the diametrically disposed springs arranged in the piston ring.

No. 1,019,504—to Chas. H. McCombs, Cleveland, O. Granted March 5, 1912; filed April 7, 1911.

**Carbureter**—Containing a membranous tube for conducting the fuel.

This carbureter, Fig. 2, has a float chamber and float, an air intake and passage and an opening into the latter for a jet. A membranous tube leads from the float chamber to the jet so that the portion of the tube adjacent the air passage lies above the fuel level in the float chamber.

No. 1,019,209—to Tom Welsh, Moffat, Scotland. Granted March 5, 1912; filed January 21, 1910.

**Cranking Alarm**—A signal indicating when the crankshaft is engaged by the crank.

This patent relates to the combination of a starting crank, Fig. 3, with an alarm situated in the path of and adapted to be engaged by the crank mechanism. Means may be provided for connecting and disconnecting cranking and alarm mechanisms.

No. 1,019,552—to Wilson E. Symons, Chicago, Ill. Granted March 5, 1912; filed May 15, 1911.

**Inflation Indicator**—Permanently attached tire pressure gauge.

The indicator, Fig. 4, contains a cylinder which has an inner shoulder between its ends, and an outer flange at one end; to this end is secured a head with an opening. Secured to the head and registering with the opening is a sleeve having a lateral opening. A piston in the cylinder is adapted to abut against the shoulder, and a piston rod has a recess secured to the piston and disposed in the sleeve; a spring is disposed between the piston and the head. Through the opening of the sleeve extends a finger projecting into the recess of the piston rod for co-operating with an indicating scale to show the position of the piston in the cyl-

inder and thereby the pressure which is exerted on the former.

No. 1,019,674—to Alair Joly de Lothinière, Srinagar, India. Granted March 5, 1912; filed March 22, 1911.

**Horn**—In which the air is imparted rapid motion by means of a fan.

The horn described in this patent comprises two tubular heads which have integral radial arms across their inner ends. A cylindrical barrel telescoping at its ends is removably connected with the two heads. A shaft is stepped in a bearing which is formed at the intersection of the arms of one head and which carries a fan adjacent to the same. A screw turning through a threaded orifice at the intersection of the arms of the other head forms an adjustable bearing for the adjacent end of the shaft.

No. 1,019,571—to Louis West, Rochester, Minn. Granted March 5, 1912; filed March 7, 1911.

**Antiskid-Jack Combination**—In which the drag brake is equipped with an elevating member for raising the car.

This combined jack and brakeshoe is formed with a socket at one end and with two straight bars extending therefrom in spread-apart relation to each other. A curved bar extends between the spread-apart ends; its surface contains gripping members acting as a drag brake. One of the straight bars carries a triangular portion on its lower part, which portion has a smooth external surface and is adapted to serve as a base for holding the vehicle in an elevated position.

No. 1,019,469—to Florence Frank Heffernan, New York City. Granted March 5, 1912, filed May 20, 1911.

**Wheel**—In which elliptical springs are used in place of wire or wooden spokes.

The subject matter of this patent is a wheel composed of a rim, a hub and a series of semi-elliptical spring spokes between rim and hub. Between these springs smaller elliptical springs are located and connected in pairs, with their ends free, but their central portions held to those of the large, semi-elliptical springs.

No. 1,019,101—to John E. Strietelmeier, assignor to the Ideal Wheel Company, Cincinnati, O. Granted March 5, 1912; filed December 14, 1910.

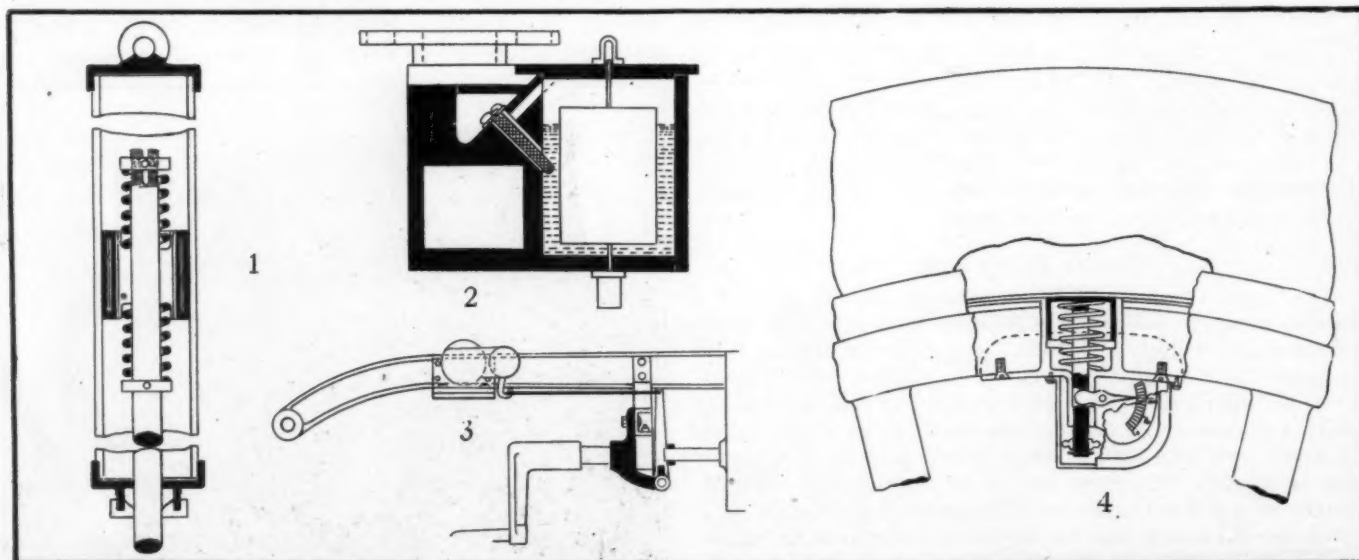


Fig. 1—McCombs shock-absorber

Fig. 2—Welsh carbureter

Fig. 3—Symons cranking alarm

Fig. 4—Lothinière inflation indicator